



# BAHRIA UNIVERSITY PROSPECTUS (FALL 2024)



**Bahria University**  
Discovering Knowledge  
A PROJECT OF PAKISTAN NAVY



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**ASIF ALI ZARDARI**  
CHANCELLOR BAHRIA UNIVERISTY







# MESSAGE OF PRO CHANCELLOR

Bahria University is a flagship project of Pakistan Navy envisioned to promote the indispensable cause of quality and multidisciplinary Higher Education in country. The University has embarked on a remarkable journey from its inception. Just over the span of two decades, it stands among the reputable universities of Pakistan. It is heartening to note that the university has become a center of excellence for knowledge and research in multiple academic disciplines. The University has kept its custom of taking lead in adoption of modern teaching pedagogies and investing in facilities featuring dedicated modern infrastructure, equipped with cutting edge technologies to ensure conducive environment with the aim to become the benchmark of academic excellence. Pakistan Navy acknowledges the support of all stakeholders and I am delighted to share that Pakistan Navy is focused on building the future of motherland and will continue with high spirits.

The founding father of Pakistan – Muhammad Ali Jinnah (RA) considered youth as the greatest asset of nation and relentlessly emphasized on the education and development of youth for a promising future. To achieve Quaid's objective, Bahria University must focus on wholesome grooming of its students through personal and professional development along with delivery of quality education. The University Alumni's are distinguished with characteristics of Competency, Ethics, Morality and Subject Knowledge.

I would encourage the Youth of Pakistan to enroll for Higher Education to be a complete person, a responsible citizen and a valuable asset for the country.

**Admiral Naveed Ashraf NI (M), Tbt**

Pro - Chancellor Bahria University  
Chief of the Naval Staff



# RECTOR'S MESSAGE

Over the history of mankind, universities have contributed to the development of humans and societies in making them more civil, social, and bringing a continuous ease in lives through knowledge creation and advancement in natural and social sciences. At Bahria University, we are keenly focused on larger goals of development and advancement of society with an aim to contribute towards a promising and prosperous global future.

I am pleased to share that the profound dedication of our faculty and management has helped us achieve significant milestones. Over a short span of time since its inception, Bahria University has emerged from a small institute to a federally chartered public sector university ranked as 2nd best in Pakistan and among 601 – 800 Universities worldwide by Times Higher Education World (THE) University Ranking 2022. The University has evolved into a comprehensive higher education institute offering over 80 degree programmes in 13 academic disciplines. All degree programmes of the university are recognized by local and international accreditation bodies. Likewise, the University is member of prominent global and regional Higher Education networks including Association of Commonwealth Universities, International Association of Universities, China Pakistan Economic Corridor Consortium of Universities and has working relations with over 45 International Universities.

At Bahria University, we continuously work towards the development of curriculum at par with international standards and ensure to incorporate right blend of academic and practical knowledge. Our student centric policies in combination with State-of-the Art facilities provide a conducive environment for learning and research thus enabling our scholars to get hold of subject knowledge and relevant expertise. We extensively strive towards inculcating and infusing values, ethos, honesty and building of strong character apart from learning & developing skills amongst students. Alhamdulillah, it is due to our dedication and measures that our graduate placement ratio is amongst highest in the country.

We look forward to grow further and keep contributing towards betterment of our homeland and globe at large. I welcome all our stakeholders to join hands with us in achieving our vision and mission of championing the larger cause of a promising global future.

**Vice Admiral (R) Asif Khaliq HI (M)**

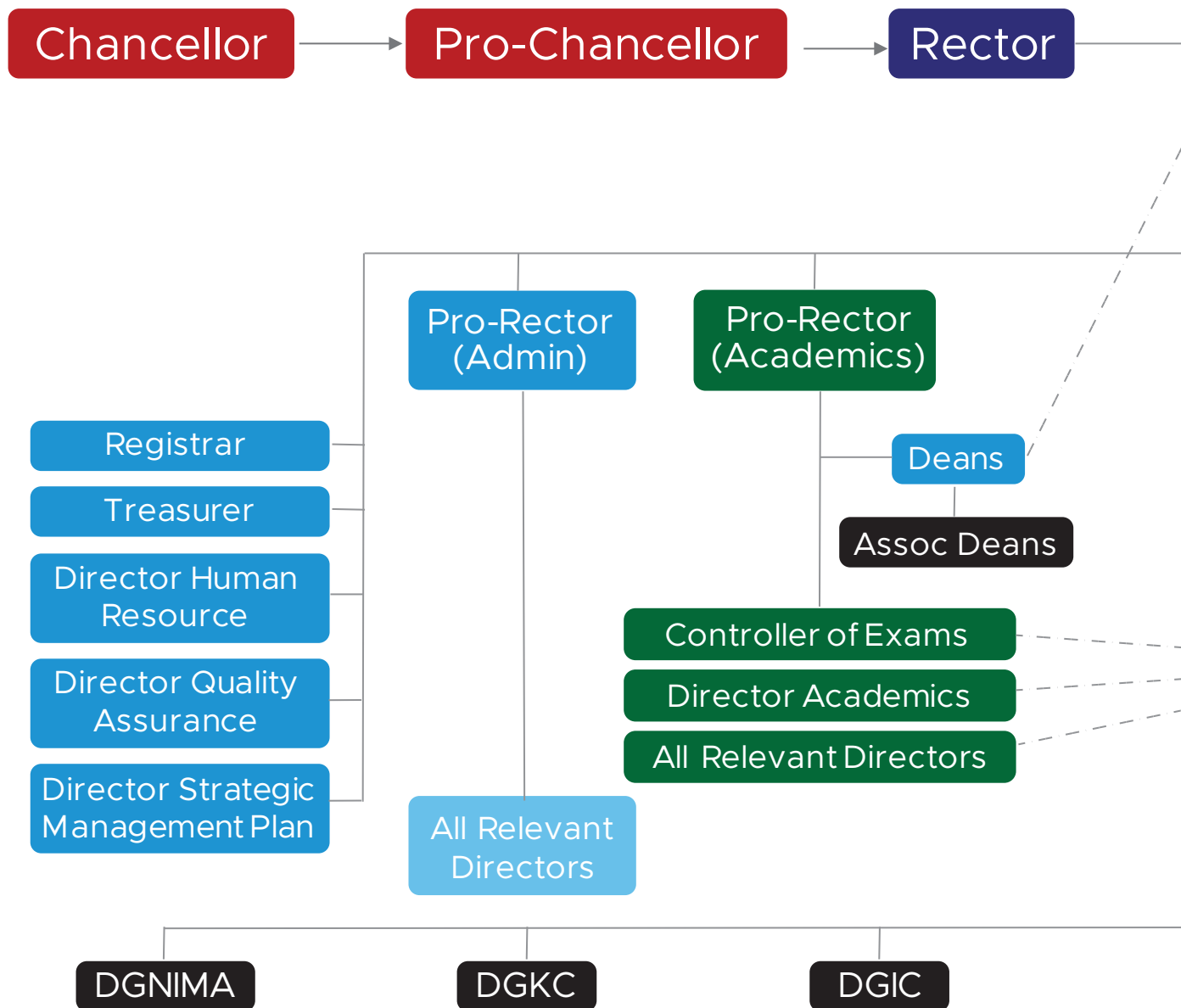
Rector Bahria University

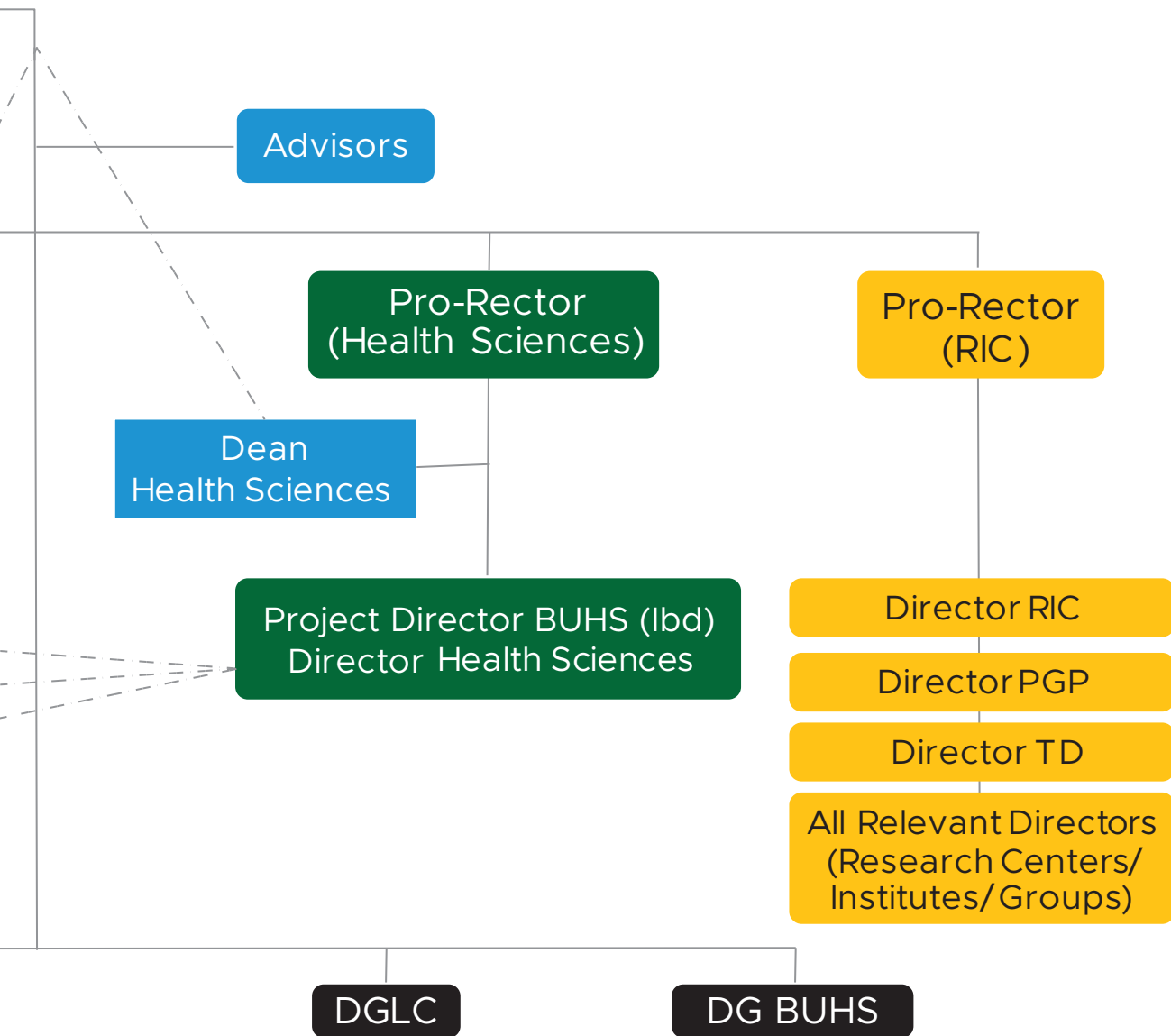


DISCOVERING  
**KNOWLEDGE**



# Bahria University Organogram





# BAHRIA AT A GLANCE

## About US

Bahria University is a Federally Chartered Public-Sector Non-Profitable institution established on 7th February 2000 through a Presidential Ordinance. Being a multi-campus (Isb/Lhr/Khi) institution of higher education, we aim to attain highest standards in teaching, learning and research that fall in accordance with global compatibility.





## VISION

To become a knowledge and creativity driven international university that contributes towards development of society.

## MISSION

To ensure academic excellence through deliverance of quality education and applied research in a collegiate environment having strong linkages with industry and international community to meet the societal challenges.

## CORE VALUES

Integrity  
Creativity  
Excellence  
Positivity  
Tolerance  
Humility  
Self-Discipline



# STRATEGIC GOALS



## **Excellence in Education**

The aim is to offer students a transformational educational experience, encompassing both the academic and the co-curricular activities, which provides them with the opportunity to fulfill their potential as successful professionals in life.

## **Excellence in Research**

The aim is to develop and sustain an environment where research is viewed and practiced as a primary function that will subsequently contribute towards the vitalization of teaching, by discovery of new knowledge, and improving people's life in our country and abroad.

## **Excellence in Global Reach**

The aim is to thrive for a global presence by equipping students, staff and faculty with the global knowledge and expertise to become a world renowned university.

## **Engaging with Business/ Industry**

The aim is to maximize the impact of our excellence in education and research by engaging effectively with business/ industry in a way that benefits staff, students, faculty and alumni to provide sustainable growth in our income from government and non-government sources

## **Improving & Ensuring the University's Financial Security**

The aim is to enhance existing income streams and develop diversified means of income generation for the financial sustainability of the university.

## **Excellence in Social Integration**

The aim is to commit our self towards development of our local communities, and foster an environment where the staff, students and faculty see themselves as part of the larger, global community.

# Why BU

Highly Qualified &  
Experienced Faculty

Strong Industrial &  
International Academia  
Linkages

45  
International  
Linkages

Research  
Funding Over  
PKR 240  
Million



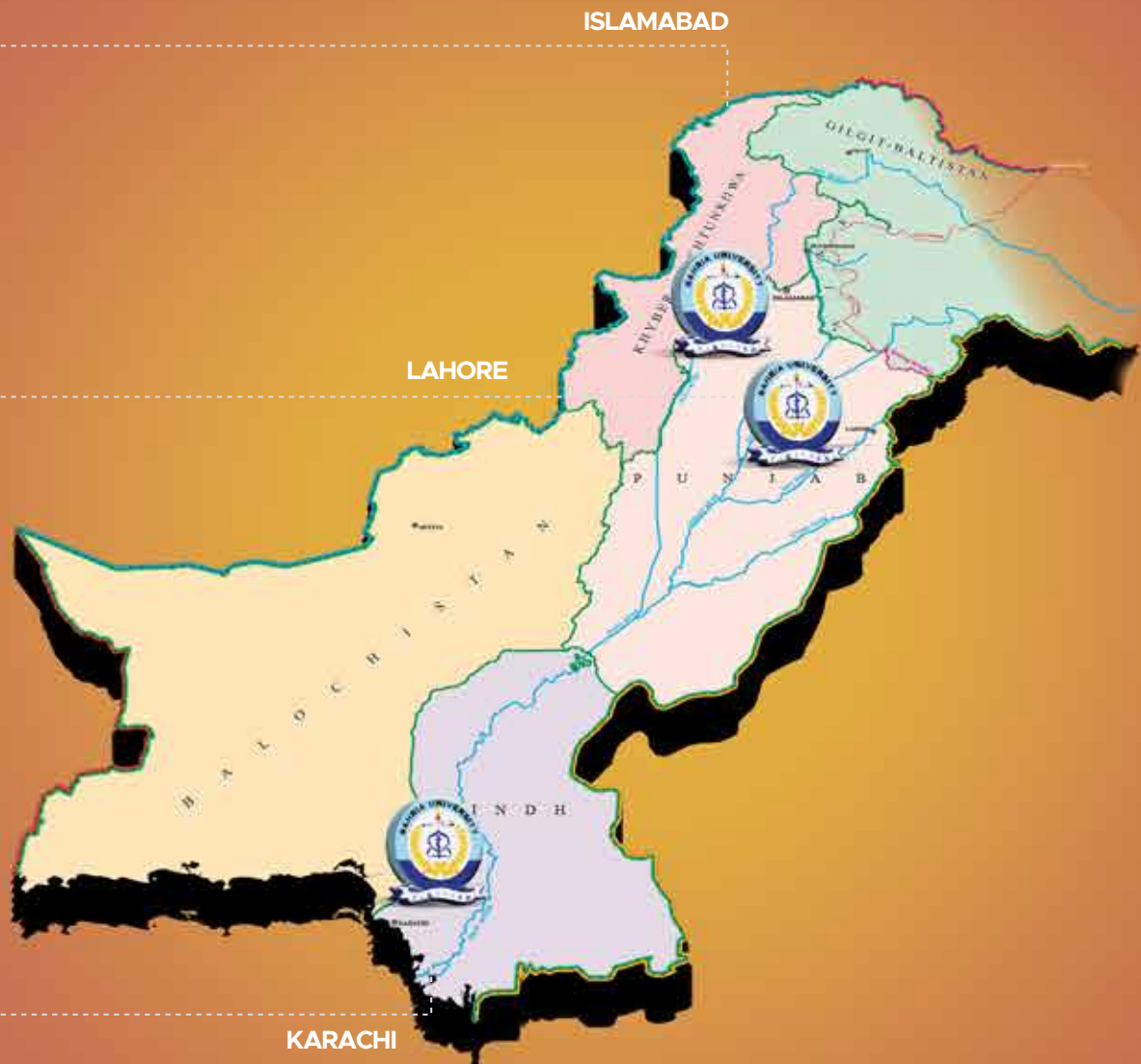
19000+  
Students

Scholarship  
Grants worth  
PKR 164+  
Million

# BAHRIA UNIVERSITY

Bahria University is a Federally Chartered Public Sector University which was established on 7th February 2000 through a Presidential Ordinance. It is a multi-campus institution of higher education, which is committed to attain the highest standards in teaching, learning and research, compatible with global requirements of practicing different professions. The University is widely recognized for preparing professionals, to assume roles as future leaders and to become good executives/ managers through development of their physical, mental, moral and professional competence. The enrollment of students has crossed 19,000+ in the campuses located in Islamabad, Karachi and Lahore.









# ISLAMABAD CAMPUS

Bahria University Islamabad Campus (BUIC) is one of the most renowned institutions of higher education in Islamabad. Hosting over 7,000 students, BUIC provides access to higher education for promising students. There are two campuses at Islamabad. The old campus is situated at Sector E-8 Islamabad, whereas, the new campus has recently been built and commissioned at Sector H-11/4 (behind HQ NESCOM) imparting education & training to over 1600 students from Fall 2021 semester. The old Islamabad campus houses three schools; Bahria Business School (BBS), Bahria Humanities & Social Sciences School (BH3S), Bahria University Law School (BULS) and Department of Professional Psychology. The new campus at H-11 houses Bahria School of Engineering & Applied Sciences (BSEAS). Our vibrant Campuses in the heart of the city serves a rapidly-growing number of rural students from the immediate area and surrounding provinces. The changes taking place at the university continue to capture the imagination of people everywhere, including the international media, and our growing base of international universities. Inspiring excellence. Transforming lives. These objectives are the driving forces at the heart of BUIC. Through our Project, we are a university internationally recognized for human reconciliation and compassion as well as for excellence in academic achievement.

## Bahria Univeristy E-8 Campus



Shangrilla Road, Sector E-8 Islamabad



+92-51-111-111-028



info@bahria.edu.pk

## Bahria University H-11 Campus



BSEAS, BUIC (H-11) Sector H-11/4, Islamabad

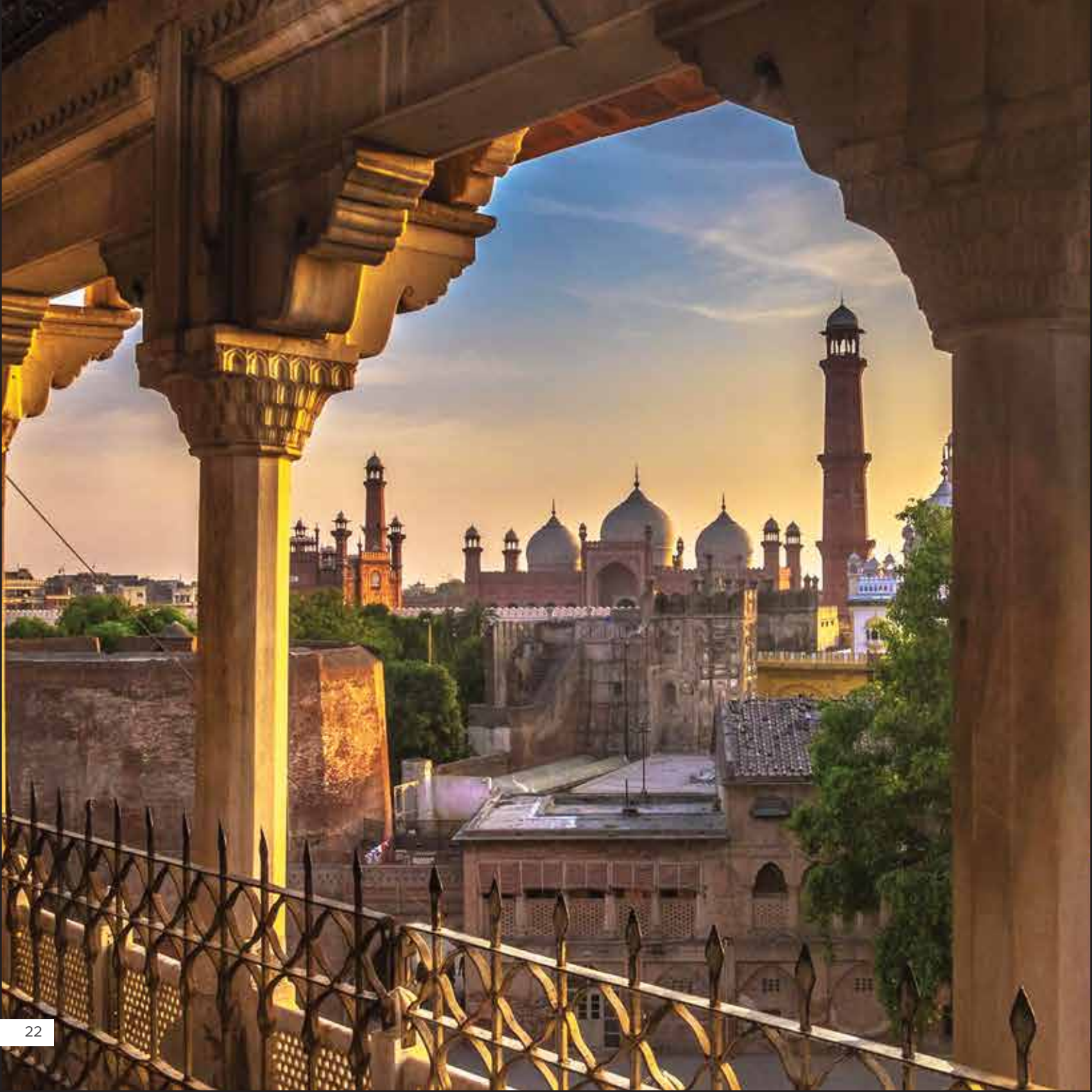


+92-51-9259503



info@bahria.edu.pk







# LAHORE CAMPUS

Bahria University Lahore Campus (BULC) is a student-centered, globally-engaged public university committed to providing highly-valued undergraduate and graduate educational opportunities through superior teaching, research, creative activity and service for the people of Pakistan and the world. BULC is committed to being an outstanding teaching-intensive, research-driven university that emphasizes student engagement, scholarly and creative achievement, civic participation, and global perspectives. The Campus is widely recognized for its high quality of services, activities and programs for students. It has strong partnerships with faculty, student and community groups so that we may serve as primary advocates to meet the needs of our diverse student population. The core values of the institution includes Educational Opportunity, Excellence, Diversity integrity and service.



47 C, Civic Center, Johar Town Lahore

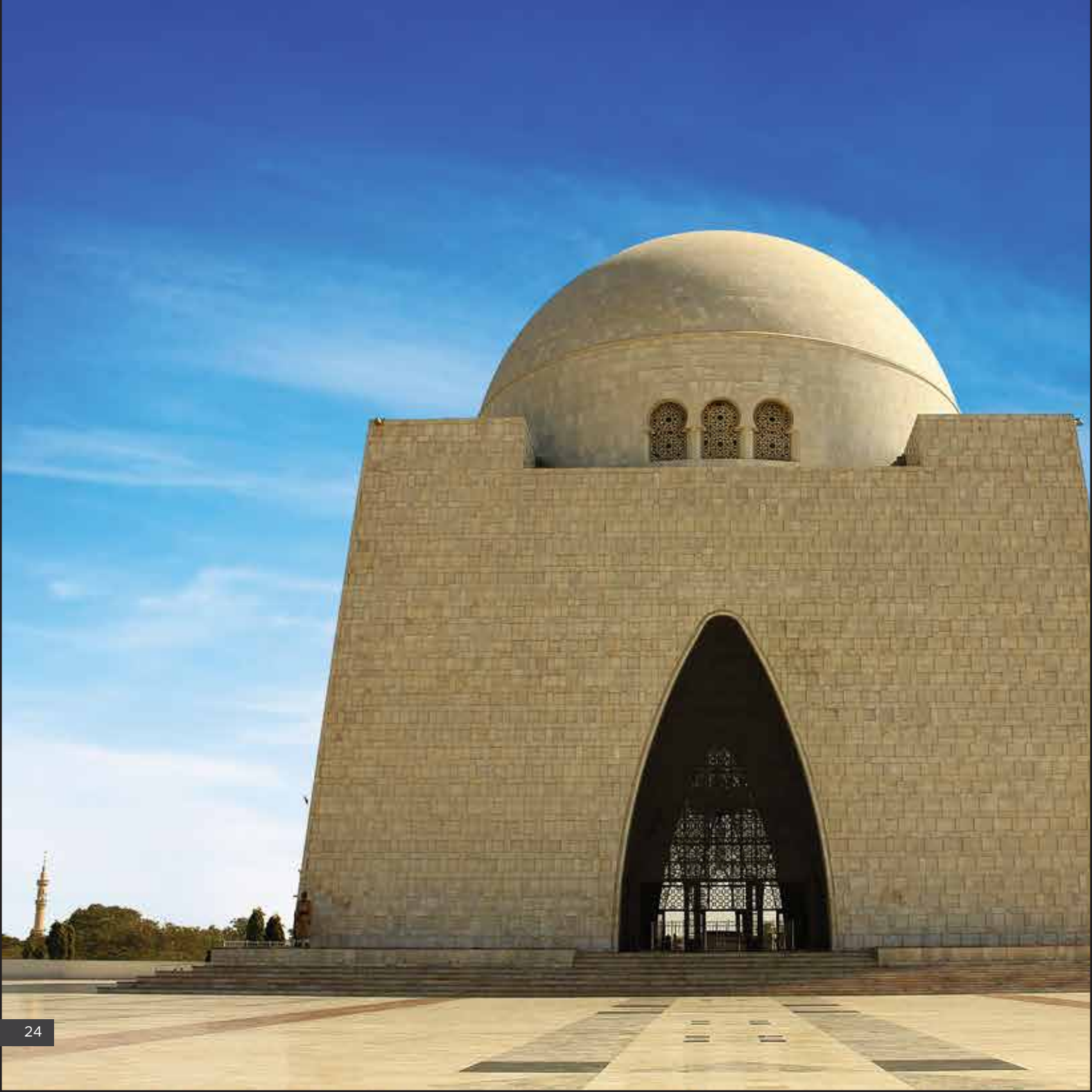


+92-42-99233408-15



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# KARACHI CAMPUS

## Bahria University Karachi Campus (BUKC)

Bahria University Karachi Campus (BUKC) was founded with a purpose: to create economic, societal and intellectual prosperity for the people of Karachi and the country. The campus houses three schools; Bahria Business School (BBS), Bahria School of Engineering & Applied Sciences (BSEAS) and, Bahria Humanities & Social Sciences School (BH3S). We began as an institution teaching wide range of subjects including Management Sciences, Computer Sciences, Software Engineering, Computer Engineering, Electrical Engineering and Media Studies. The Karachi campus has students, faculty and staff take problems in hand and work with industry, and government to solve them. Our high-performing students apply what they learn in the real world by conducting research, working in internships and co-ops, and performing acts of world-changing service. That experiential education ensures they leave here ready to lead the workforce, confident in the knowledge that Bahria University consistently rates as one of the best values in higher education.



13 National Stadium Rd, Karachi



+92-21-111-111-028



info@bahria.edu.pk

## Bahria University Health Sciences (BUHS)

Bahria University Health Sciences (BUHS) Campus was established in 2008 with the induction of experienced and highly qualified faculty. The state-of-the-art 7-storey building houses 5 lecture halls each with a capacity of 150 seats and a beautiful auditorium with a seating capacity of 500. There are fully equipped laboratories, museums, dedicated teaching rooms for group teaching and a skills laboratory. BUHS strictly follows the curriculum specified by the Pakistan Medical and Dental Council.



Adjacent to PNS SHIFA, DHA Phase-II, Karachi



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# KARACHI CAMPUS

## Institute of Professional Psychology

The Institute of Professional Psychology (IPP) at Bahria University functions as an educational establishment focused on the career development of its students. The Institute offers a range of specialized programs ranging from Bachelors till PhD programs. Undergraduate students are given basic and fundamental knowledge related to different aspects of psychology with the aim toward developing their thorough grounding in the field. On the other hand, students at the postgraduate level from MS/MPhil to PhD are provided with the unique opportunity to engage in experiential learning with supervised internships in the field settings along with gaining an enhanced outlook of professional psychology based on their selected specialization. Both students and faculty are also actively engaged in community work, aiming to benefit the community while fulfilling the experiential requirements for various courses. The Psychological Services Centre, Umeed-e-Nau, offers individualized assessments and a range of therapeutic plans tailored to the specific needs of each client. Beyond clinical practice, IPP provides consultancy services in assessment and counseling to various national and multinational organizations.



13 National Stadium Rd, Karachi



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# ISLAMABAD CAMPUS

## National Institute of Maritime Affairs (NIMA)

National Institute of Maritime Affairs (NIMA) had been set up at the Bahria University, Islamabad Campus with a view to encourage research in maritime matters. NIMA has accordingly developed linkages with various international universities and maritime research institutes. It has also hosted a number of international seminars, conferences and workshops, high-lighting various aspects of the maritime domain.



Bahria Univeristy E-8 Campus



Shangrilla Road, Sector E-8 Islamabad



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# SCHOLARSHIPS/FEE CONCESSIONS/ WAIVERS/STUDENT LOANS

## Introduction

10.1.1 Bahria University offers various Scholarships for students with an aim to encourage excellence in studies through rewarding high academic achievers through various types of Advance Merit /Merit scholarships and also to support less privileged student(s) to attain their goals/target by offering purely Need Based Scholarships. BU believes that no one should be deprived of getting education merely on the grounds of inability to pay.

## Objectives

BU scholarships are offered with an objective to;

- a. Provide financial support to academically talented and less privileged students with an objective to empower them to acquire quality education at Higher Education level.
- b. Elevate the socio-economic status of the students by enabling them to get the modern education and career opportunities for their brighter future.
- c. To improve access to higher education, especially for those belonging from far flung areas of Pakistan

## Types of Scholarships Offered and their Eligibility Criteria

The eligibility criteria for different types of scholarships are as under:

**1. Advance Merit Scholarships – Types;** The University generally award Advanced Merit

Scholarships in the following five categories, in order to encourage and ensure that the most talented students join Bahria University.

- i. Advanced Merit Scholarship for Board Toppers;
- ii. Advanced Merit Scholarship for Top Rankers in University Merit Lists;
- iii. Advanced Merit Scholarship for Outstanding Performers in A-Levels;
- iv. Exemption of admission fee to Bahria university graduates/alumni for MBA/MS/MPhil/PhD program at Bahria university
- v. Incentive to attract High Achieving Candidates into PG Programs.

### **Advanced Merit Scholarship for Board Toppers (for undergraduate programs)**

Bahria University shall offer 100% total fee waiver/concession (including all other charges) for the first semester, to top three toppers of all Boards of Intermediate and Secondary Education (BISE).

**Note:** However, its continuation during the subsequent semesters will be subject to the condition that awardee must maintain his/her minimum GPA/CGPA of 3.50

### **Advanced Merit Scholarship for Top Rankers in University Merit Lists**

Top merit position holders in Bahria University admission merit list according to their respective discipline will be awarded scholarships/fee waiver



as per following criteria:

**a. Undergraduate Programs;** Top three student scoring at least 70% in the merit lists for Management and Business Studies (considered together), Engineering (all Engineering programmes considered together) and Computer Sciences, shall be eligible for award of scholarship in the form of Tuition Fee waiver as follows:

- **1st Position Holder      75% Tuition Fee waiver**
- **2nd Position Holder      50% Tuition Fee waiver**
- **3rd Position Holder      30% Tuition Fee waiver**

**Note:** The top-ranking student scoring at least 70% in the merit lists for Law, Earth & Environment Sciences, Media Studies, Humanities & Social Sciences and Psychology, shall be eligible for award of scholarship in the form of 75% Tuition Fee waiver.

**b. Post-Graduate Programs;** The top-ranking student scoring at least 70% in the merit list of MBA, MS, MPhil, or equivalent at each CU shall be eligible for award of 50% tuition fee waiver.

**Note:** For continuation of the scholarship in the subsequent semesters for the above categories the students will be required to achieve a GPA/CGPA of at least 3.50.

### **Advanced Merit Scholarship for Outstanding Performers in A-Levels**

Bahria University shall award scholarship 75% waiver/concession in tuition fee, to all students who have achieved minimum 03 A's in A Levels. Eligible students shall have to produce equivalence certificate issued from the Inter Board Committee of Chairmen (IBCC).

For continuation of scholarship in the subsequent semesters the students will be required to achieve a GPA/CGPA of at least 3.50

### **Exemption of Admission Fee to Bahria University Graduates/ Alumni for MBA/MS/MPhil/PhD Programs at Bahria University**

Bahria University Graduate/Alumni shall be given 100% Admission fee waiver for admission in MBA/MS/MPhil and PhD Programs.

### **Incentives to attract High Achieving Candidates into PG Programs**

The incentives to attract High Achieving Candidates into PG Programs will be as following:

#### **a. From Non-Engineering background;**

Candidates for PG programs (MBA/MS/MPhil/PhD) with 95% marks (in case of annual examination) or CGPA 3.75 from non-engineering programs in last degree from HEC recognized National & International Universities shall be offered 50% waiver in tuition fee.

**b. From Engineering background;** Candidates for PG programs (MBA/MS/MPhil/PhD) with 80 % marks (in case of Annual examination) CGPA 3.50 from engineering programs (in semester system), in last degree from HEC recognized National & International Universities shall be offered 50% waiver in tuition fee.

For continuation of scholarship in the subsequent semesters, the students will be required to achieve GPA/CGPA of at least 3.50 for Engineering and GPA/CGPA 3.75 for Non-Engineering program.

### **2. Merit Scholarships for Batch Toppers (For all semester based programs)**

The merit Scholarships for Batch Toppers for all semester based programs will be as following:

**a. For Undergraduate Programs;** Top scorer students from each batch, achieving first three (03) position in their Semester Examination shall

## SCHOLARSHIPS/FEE CONCESSIONS/ WAIVERS/STUDENT LOANS

be awarded Merit Scholarship as per following;

- 1st position Holder 70%
- 2nd Position Holder 40%
- 3rd Position Holder 30%

**b. For Post-Graduate Programs (MBA/MS/MPhil/ PhD or Equivalent);** Top scorer students from each batch, achieving first two (02) position in their Semester Examination shall be awarded Merit Scholarship as per following;

- **1st position Holder 70%**
- **2nd Position Holder 40%**

**Eligibility Criteria;** The criteria to qualify for the Merit Scholarship will be as following;

- a. The students of all programs are eligible for Merit Scholarship.
- b. The Merit scholarship shall be offered to students on the basis of GPA of their previous semester & tuition fee of their current semester.
- c. The students must achieve minimum GPA  $\geq 3.75$  in order to qualify for the award of Merit Scholarship for non-engineering program(s), in case of engineering & computing programs, student has to achieve minimum GPA  $\geq 3.60$  as per details mentioned above.
- d. In case of a tie, the student with the higher percentage will get the Scholarship. In case of a double tie, all students will be awarded the Scholarship.
- e. The student(s) have to follow the academic road map with regular course load for all type of Merit Based Scholarships.
- f. Student availing Naval fee concession will also be eligible for Merit scholarship as per policy,

however they can only avail one benefit at a time (i.e. fee reduction or merit scholarship).

g. BU Faculty and administrative staff qualify for Merit scholarship shall not be considered for award of scholarship if availing already any fee concession.

h. Merit Scholarship shall not be provided for the Summer Semester, final semester (Graduating Batch).

i. A student in receipt of more than one scholarship/waiver shall be eligible to avail one scholarship as per student(s) discretion.

j. For MS/MPhil only for 02 years of program, for the purpose of award of Merit Scholarship, the GPA of course work shall only be considered in the 3rd semester.

### 3. Financial Assistance Scholarship (FAS)

Financial Assistance Scholarship shall be offered to the needy and financially weak students in order to partially or fully support them. New intake after becoming bona-fide students and already enrolled students can apply subject to fulfilling the eligibility criteria. The scholarship once granted in this category remains available to the students for the entire degree program provided their performance shall not fall below GPA/CGPA 2.50.

**Eligibility criteria for award of Financial Assistance scholarships;** Following shall be the eligibility criteria to apply for Financial Assistance Scholarship Program:

- a. Financial Assistance Scholarship shall mainly focus on to support students from low-income background.
- b. Students of all programs are eligible for

Financial Assistance Scholarship subject to the condition he/she finds financial constraints to cope with educational expenses.

c. For fresh intake, results of their Matric, FA/FSc., O & A levels or equivalent be considered for award of scholarship

d. For the students enrolled in 2nd semester onwards shall be eligible to apply if he/she has a minimum 2.50 GPA/CGPA in the previous semester and for continuation at least 2.50 GPA/CGPA has to be maintained in the subsequent semesters. If the students fail to maintain 2.50 GPA/CGPA in the previous semester, then their scholarship shall be withheld till the time he/she improves academic grades to 2.50 GPA/CGPA.

e. Students with any physical disability shall be preferred

f. Students belonging to less developed areas (as identified by GoP) shall be preferred if fall under FAS eligibility criteria.

g. Students mentioning income and expenditure details has to justify with supporting documents.

#### **4. Merit Scholarships at BUMDC (For Annual based Examinations)**

For MBBS & BDS programs, merit scholarships for batch toppers shall be awarded on the basis of the result of annual examination except the final professional examination. The award shall be a lump sum amount for the year following the annual examination, as follows:

#### **A. MBBS Students**

| Merit in Annual Exam | Scholarship Amount |
|----------------------|--------------------|
| 1 <sup>st</sup>      | Rs 100,000         |
| 2 <sup>nd</sup>      | Rs 75,000          |
| 3 <sup>rd</sup>      | Rs 50,000          |

#### **B. BDS Students**

| Merit in Annual Exam | Scholarship Amount |
|----------------------|--------------------|
| 1 <sup>st</sup>      | Rs 100,000         |
| 2 <sup>nd</sup>      | Rs 75,000          |

For all semester-based programs at BUMDC, general scholarship policy of BU shall be implemented i.e. Merit & Need based both (except Advance merit categories)

#### **5. Study Loan/ Revolving Fund**

A newly inducted student whose academic progress is impeded by the lack of financial resources to pay the fee(s), shall be eligible for financial support through the Study Loan. The loan will be interest-free and available to the students of all degree programs except MBBS and BDS, though the preference shall be given to UG students.

To apply for the loan, a student shall first secure admission and get the fee voucher. A student (only 1st semester intake) can request for the loan against the total 1st semester fee. The loan shall be processed through the Central Scholarship Committee with recommendations of the Head of the CU. Final approval shall be accorded by the Rector. Following rules shall apply:

a. The parents/guardians (spouse in case of a married student) shall be the joint borrower(s)/guarantors (irrespective of their

## SCHOLARSHIPS/FEE CONCESSIONS/ WAIVERS/STUDENT LOANS

means and age of the student).

b. There shall be no security deposit by the applicant (student). A bond shall be signed between the applicant (student), his/her guarantor and BU, mentioning also the repayment schedule.

c. The final transcript or degree shall not be issued prior clearance of all payable loans by the student.

### General Rules for Award of BU Scholarships

Eligibility of students for scholarship shall be subject to following conditions:

a. Student(s) of Bahria University in any semester are eligible, subject to the conditions as indicated with respect to their respective category.

b. The student(s) has to follow the academic road map with regular course load for all type of Merit Based Scholarships.

c. Student(s) already in receipt of one scholarship/fee concession from university or external resources are ineligible to apply for any other scholarship.

d. Progress of Financial Assistance and all Merit Based Scholarships will be reviewed every semester.

Any International student falling under Merit Scholarship category shall be awarded as per the policy. However, for Need Based scholarships, special approval shall be sought from Honorable Rector.

### 6. Sponsor a Student Scheme

Sponsor a Student Scholarship Scheme is introduced at Bahria University with an objective

to financially support students from less privileged class of society. For this specific program, University shall approach well off individuals/corporate companies'/donor agencies to financially support fully or partially the needy student(s). Interested sponsors shall be requested to bear the educational, expenses of the student(s) along with boarding/meal/books allowance as per sponsors willingness. Award of scholarship under this category shall be purely on Need based grounds, keeping in view the financial background of the applicant's family. This program shall be launched for all programs at UG and PG level both.

### 7. Interest Free Laptop Loan Scheme

Investment in youth has been recognized as the best long-term speculation for prosperous future of any nation. Bahria University facilitate its students in different ways to fulfill their dream of becoming successful graduates so as to perform exceptionally good in their practical life. Laptop is now an important gadget for students to perform their academic and research activities. In this information age, personal computing devices, like a laptop, is a must especially for students at Higher Education level. Keeping this reality in consideration and realizing its importance BU has launched its Loan policy for Laptop procurement w.e.f. Fiscal year 2020-21. This scheme shall support financially underprivileged students at UG Level to buy laptops as per their academic requirements.

**Eligibility Criteria;** Following shall be the eligibility criteria;

a. Loan for laptop procurement shall be offered to the students from 2nd semester to 6th

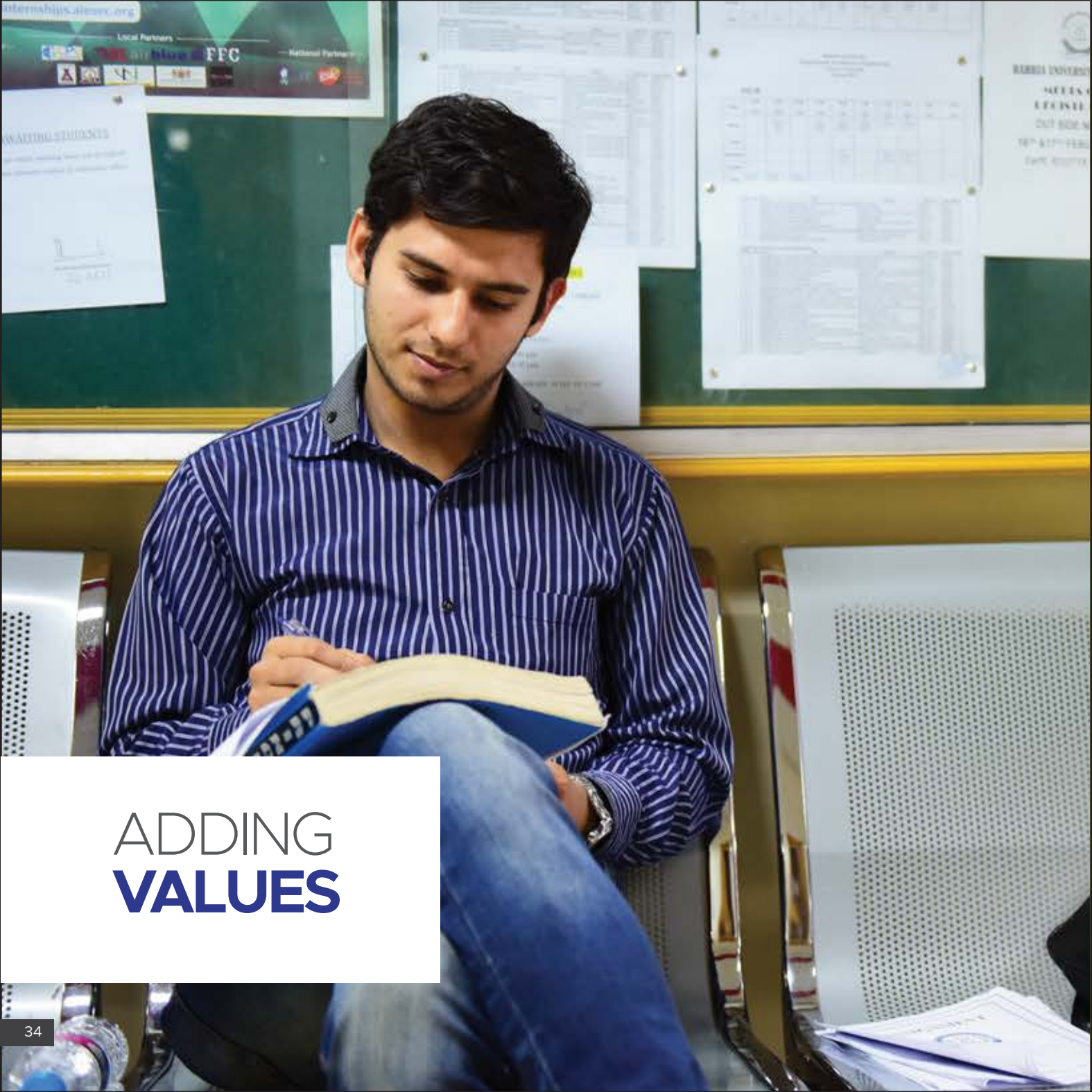


semester students holding minimum CGPA of 2.5 at UG level and in case of annual system student of 2nd year/3rd year with 50% Marks can apply/avail the facility.

b. Selection shall be made based on need assessment of students i.e. those students who cannot afford to buy laptops for their academic use shall be eligible to apply.

c. Two committees one at Campus Level and other at Head Office will evaluate the individual cases and put up the recommendation to Honorable Rector for final approval.





ADDING  
**VALUES**

## Learning & Teaching Methods:

Today Bahria University is considered to be one of Pakistan's 21st century, business-facing university. We are committed to giving our students the skills they need to succeed in the global marketplace.

We strive to develop the qualities of confidence, self-worth and high employable skills with in our students so that they can excel in the field they choose to work in We strive to achieve this by:

Combining traditional teaching methods by top academic staff with digital resources.

---

Teaching courses that are all designed with the input of business and professional bodies.

---

Giving students the change to learn about employability through listening to the experience of our alumni.

---

Organizing networking events where staff, students and graduates can meet.

---

Offering a vibrant multicultural campus.

---

Giving students the option of studying at one of our partner universities overseas.

---

Offering students valuable work experience in research, business or industry before their final academic year.

---

**One of our aims is to bring higher education to a wider audience. We provide flexible learning opportunities for local residents and businesses, including:**

Evening classes, summer schools and short courses at community venues

---

Public lectures and workshops

---

Part-time study, continuing education program, and new foundation degrees.



## Career Office

Bahria University remains committed in providing not only quality academic services but also offers career services that include employment opportunities, professional grooming and counseling to its students and alumni. The Office of Student Affairs and Career Services keeps on strengthening academic linkages with industry in order to provide the market with our talented and skilled graduates as valuable workforce. Dedicated staff has been appointed in all BU Campuses to facilitate students and Alumni in best possible way. A very efficient mechanism is followed where the students and alumni are assisted in choosing the

right career paths and future goals. BU strive hard to meet the very dynamic requirements of job market and graduates by creating innovative ways of bridging the gap of academic world and industry. The Office of Student Affairs and Career Services acts as a central hub for its students and alumni and apart from routine job alerts, it organizes various training programs, seminars and workshops by inviting market professionals who share their expert opinion and experiences which helps the students in building a deep insight of the corporate world.

### Career Counseling can help you:

- discuss your interest /profession
- discover what you can do along with your major
- learn the way to investigate profession fields, industries, and employers
- discover what an internship is, why you want one, and the way to get one
- Critique your resume
- develop networking talents

### Getting Professional:

Professionalism, Evaluation & Learning Professionalism is a cornerstone of any organization and is essential to achieving excellence in research, education, clinical care and university and community service. It requires an ongoing commitment to honesty, integrity, respect, altruism, accountability, compassion, empathy and self-improvement. Bahria University reaffirms this commitment to a climate of respect, civility and cooperation among students, interns, residents, faculty, administrators, staff and society. Programs

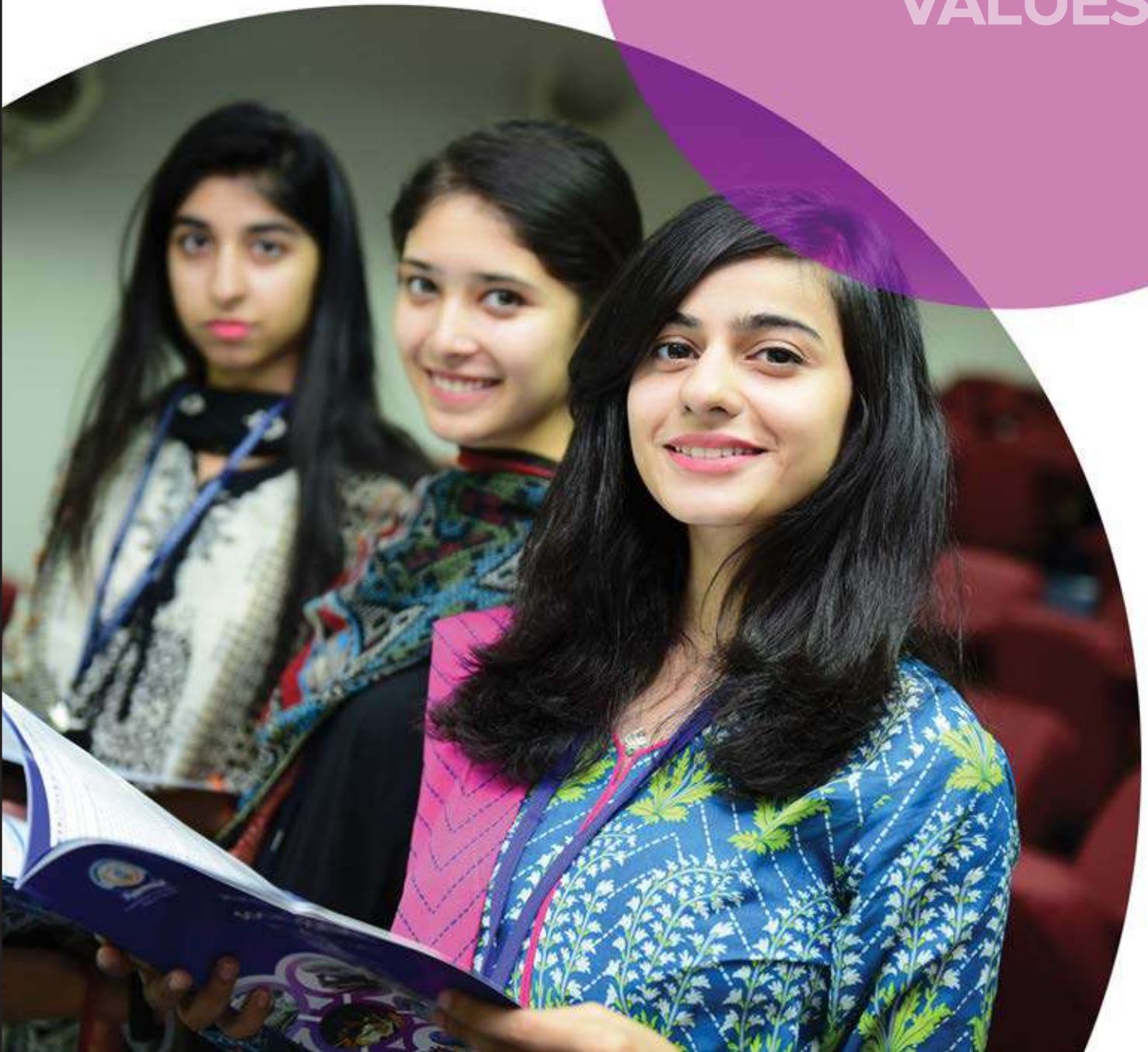
and services offered by Bahria University support and enhance the goals to educate and oversee student's personal and professional accountability as well as to ensure academic success. These include

- Faculty-student mentoring programs
- Course and instructor evaluations
- Administration of the Learning Resource Center
- Academic enrichment intervention strategies,
- Supervision of exam proctors,
- Academic enhancement workshops.

### Interactive Approach:

Interactive learning is a hands-on approach to help students become more engaged and retain more material. With or without a form of technology, interactive learning helps students strengthen problem solving and critical thinking skills,

# ADDING VALUES



# ADDING VALUES



## 1. Brainstorming

Interactive brainstorming is typically performed in group sessions. The process is useful for generating creative thoughts and ideas. Brainstorming helps students learn to pull together. Types of interactive brainstorming include:

- Structured and unstructured
- Reverse or negative thinking
- Nominal group relationships
- Online interaction such as chat, forums and email
- Team-idea mapping
- Individual brainstorming

## 2. Think, Pair and Share

Establish a problem or a question. Pair the students. Give each pair sufficient time to form a conclusion. Permit each participant to define the conclusion in his or her personal voice. You can also request that one student explain a concept while the other student evaluates what is being learned. Apply different variations of the process.

## 3. Buzz session

Participants come together in session groups that focus on a single topic. Within each group, every student contributes thoughts and ideas. Encourage discussion and collaboration among the students within each group. Everyone should learn from one another's input and experiences.

## 4. Incident process

This teaching style involves a case study format, but the process is not as rigid as a full case study training session. The focus is on learning how to solve real problems that involve real people. Small groups of participants are provided details from actual incidents and then asked to develop a workable solution.

### Personality Grooming:

Bahria University places strong emphasis on personality development of its graduates to improve their employability skills. In this regard a hybrid student grooming programme is in place focusing on both academic and non-academic activities. In terms of personality development through academic means, eight learning dimensions have been identified, that are covered in various subjects offered in the degree programmes at BU. This includes IT skills, numeracy skills, oral communication and public speaking skills, business communication skills, self-management, psychological & emotional development, career exploring and management and corporate skills. Understanding the importance of co-curricular activities, the university has also identified six personality dimensions that are focused for development in a student through various co-curricular activities including civic education, intellectual development, physical education, internationalization, social & emotional development and aesthetic development. So whether it is attending guest lectures by renowned speakers, participating in arts, dramatics, sports or music activities, they are all managed and planned in a way to ensure overall development of students' personality!

# Facilities

## Business Incubation Centre

Bahria Universities Business Incubation Centre (BIC) is dedicated to help students explore different spheres of research which include human needs, emerging technology and social trends. It seeks to create new ideas and businesses that are intuitive and enriching without losing sight of the experience and encounter. BIC tries to find a new sensibility that allows it to create products that focus on the augmentation of human capability and to further examine the boundaries between physical and mental limitations. Through projects that are self-initiated or developed in collaboration with industry, the Centre aims to experiment with and develop new design methods.

## E- News Paper

The Bahria University Tribune, now published from Islamabad, is a try at your hand at journalistic writing or find out what it's like to work in the newspaper business? Students submit their articles on a weekly basis at The Tribune run by students. No matter what majors are, your participation is always welcomed.

## FM Radio

Bahria University has the privilege to be among the few institutes in Pakistan to have its own FM Radio Channel. Functioning at the frequency of 106, the FM Radio provides an excellent opportunity for the students of Media Studies to get hands on experience in running and managing radio programs.

## BU Media House

Bahria Media House is the project of BU to provide a platform for its students to showcase their talent and skills to the outer world through the medium of Web TV, FM Radio and Online Newspaper. The Media house equipped with State of the art facilities is the idyllic place for the pupils to pursue their dreams in the world of digitalization. Bahria University is creating artwork in a range of applications that include prospectuses/ catalogues and brochures and magazines.

## BUTV

BUTV is Bahria University's student-operated media production network. Live-streamed programming is available at [bahria.edu.pk](http://bahria.edu.pk) and on campus television channel. BUTV produces an array of news, information, sports and variety programming. Open to any BU student is its annual membership. BUTV productions and administrative departments are based at the Bahria University Media House and Media Studies Department.

## Networking Partners



# Libraries

The Bahria University libraries aim to encourage and support academic and research activities of university researchers, faculty, staff and students. They provide a full range of services, including books loans, online information searching, reference services, photocopying, access to digital resources, CD searching and research support services, i.e. Endnote training and APA style manual, etc. The libraries are managed by qualified and experienced staff, dedicated to provide quality services for its users.





# INTERNATIONAL LINKAGES

Internationalization is functioning at the heart of BU. Our University is one of the first few universities of the country that has a formal International Office setup to look after academic linkages and ties with international universities. The journey of internationalization of BU is now over a decade old with number academic partnerships in countries such as UK, USA, Australia, Canada, China, Turkey, Netherlands, Italy, Malaysia, Bangladesh, Iran & Thailand. There are several opportunities for the students of Bahria University to avail international experience through guest lectures by foreign speakers, short study tours to partner

#### **UNITED KINGDOM**

- University of Plymouth
- University of Bedfordshire
- University of Greenwich
- University of Leicester
- University of Nottingham
- University of Northampton
- York St. John University
- Corbett Cent – King's College
- Southampton Solent University
- Brunel University

#### **UNITED STATES OF AMERICA**

- MIT (Resource Sharing)
- University of Idaho
- Valparaiso University

#### **NETHERLANDS**

- Amsterdam University of Applied Sciences

#### **CANADA**

- Dalhousie University

#### **CHINA**

- Hangzhou Dianzi University
- Shanghai Lixin University
- Beijing Technology & Business University

#### **BANGLADESH**

- International University of Business, Agricultural & Technology

#### **IRAN**

- Chabahar Maritime University
- Damghan University

#### **ITALY**

- Trieste University

#### **AUSTRALIA**

- Griffith University
- Macquarie University
- Edith Cowan University

#### **MALAYSIA**

- AIMST University

#### **THAILAND**

- Burapha University

#### **TURKEY**

- Izmir University of Economics
- Istanbul Kemerburgaz University
- Istanbul Aydin University
- Dogus University
- Yasar University
- Erzurum Technical University
- Hakkari University
- University of Sirnak

Universities, participation in international conferences, attending international internships programmes, exchange of students for a semester with universities in Turkey, Australia & UK, credit transfer opportunities to selected partner universities on a 3+1 and 2+2 articulation arrangements, international summer school programmes and many more. To view list of existing partner universities of BU, please visit the University website. All international opportunities are advertised through International Office online portal available at [www.bahria.edu.pk/internationalopportunities](http://www.bahria.edu.pk/internationalopportunities).

# Research at **Bahria University**

Exploring the new trends and new facets of higher education and research has assumed added significance in the globalized world of the twenty-first century. Since the strength of today's economies is increasingly based on how well they can harness knowledge and expertise, the role of the higher education system has become crucial in international competition. BU undergraduates pursue independent research through personal Research Consultations and administration of competitive research grants. Bahria University as one of the Pakistan's leading universities, has a broad array of faculty conducting cutting-edge research in all disciplines. BU undergraduates become involved in research by identifying

resources, narrowing search, and shaping initial inquiries. Increase in international mobility in tertiary education, gave rise to new modes of competition within higher education and research. This situation stems from the technological revolution in communications, developments in science, as well as the very nature of knowledge, which now operates via accumulation and paradigm shift. Economic competition, Competition amongst academic and research institution and diversification & modernization are the three major trends that impose the importance of Research at Bahria University.





# Life at **Bahria**

# The BU Experience

Want to know what it's really like to be a student at Bahria University?

Bahria University focuses on strong academic grooming of the students along with emphasis on individual development by engaging them in various curricular & co-curricular activities. Bahria support individuals to achieve their goals and make them move forward their professional life. These are the opportunities which everybody is looking forward to enhance their knowledge base & soft skills.

Student life & Engagement is dedicated to offering modern programs to help students get involved on campus giving vast opportunities to expand leadership skills and pursue their future goals. The university works in close liaison with international partner universities to provide international exposure to our students.

# Sports at BU

The importance of sports in the life of students is invaluable and plays a pivotal role in their overall development. With this perspective in view, the university provides many opportunities and facilities to its students to participate in international, national and university level sports.

A state of the art Gymnasium having wide range of indoor games facilities: courts for basketball, volley ball, badminton, a fitness room equipped with the latest machines is available at Islamabad Campus.





# Music at BU

Extra-curricular activities including music are an integral part of life on the campus. Undergraduates, postgraduates, alumni and staff all contribute to the rich musical life of the University. Music Club is a student-run body comprising of a number of talented students of the university. The main objective of the music club is to expose and nurture the hidden talent of the students and giving the confidence to represent them nationwide as proud BU students. We are proud of this music heritage of the university that has produced world class singers such as Umair Jaswal, Uzair Jaswal and Shamir Aziz Quidwai. Groups and individuals are open to express their talent anytime.

# Dramatics at Bahria University

Dramatic Arts education is an important means of stimulating creativity in problem solving. It can challenge student's perception, about their world and about themselves. Dramatic exploration can provide students with an outlet for emotions, thoughts, and dreams that they might not otherwise have means to express. A student can, if only for a few moments, become another, explore a new role, try out and experiment with various personal choices and solutions to very real problems from their own life, or problems faced by characters in literature or historical figures. This is perhaps the most important reason for Dramatic Arts in schools. Theater and Drama has also been a major part of our culture since the very beginning. BU has always provided means by which students can actively participate in the activities and express their different personalities.

Bahria University's Dramatics club is the Centre of attention. The club enables the students to polish their hidden talent performing live and is thus helping students to promote the culture in a positive manner. A huge body of students interested in performing live in theatres is encouraged by the administration of the university. Plays are being arranged in which students express themselves by performing on the most sensitive societal issues. It is not a 'traditional' drama society in the sense, but is made up of a committee which meets every week to discuss funding for shows and to make decisions which improve opportunities for drama across the University.





# Bahria University Psychological Services Centres

Trauma Therapy Unit (TTU)

The Psychological Services Centres across Bahria University are committed to providing the best mental health services to all in need of assessment, counseling, and/or psychotherapy. High-quality, problem-focused, and ethical services are ensured. The Centres offer support to all enrolled students, faculty, staff and general public experiencing distress arising from various emotional issues.



# Student Support Centre (SSC)

SSC is the hub of all non-academic activities and student centered services to maximize student potential by polishing student talents and skills, developing them into all-rounders with grooming interventions, self-help resources, interactive workshops and participation outside university. The Student Support Centre has a system under which it operates and provide support to students through following three wings:

- The Student Facilitation Centre
- Community Support Program
- Students Resource Centre





**Bahria University**  
Discovering Knowledge

**Institute of  
Professional  
Psychology  
(IPP)**

**Bahria  
University  
Health  
Sciences  
(BUHS)**

# **Programmes Offered**

**Islamabad  
Campus**

**Karachi  
Campus**

**Lahore  
Campus**

## PROGRAMS OFFERED

### Business Studies

- **ADP**-Business Administration (BUKC)
- **BBA** (BUIC E-8, BULC, BUKC)
- **MBA** 1.5 & 2 Years (BUIC E-8, BULC, BUKC)
- **MBA**- Pharmaceuticals & Health Management (BUKC)

### Computer Science

- **ADP**-Computer Science (BUIC H-11, BULC)
- **BS**-Computer Science (BUIC E-8, BUIC H-11, BULC, BUKC)
- **BS**-Information Technology (BUIC E-8, BUIC H-11, BULC, BUKC)
- **BS**-Artificial Intelligence (BUIC E-8, BUIC H-11, BUKC)
- **MS**-Artificial Intelligence (BUIC H-11, BUKC)
- **MS**-Computer Science (BUIC E-8, BULC, BUKC)
- **MS**-Data Science (BUIC E-8)
- **MS**- Information Security (BUIC E-8)
- **MS**-Mathematics (BUIC E-8)
- **PhD**-Computer Science (BUIC E-8, BULC, BUKC)
- **PhD**-Mathematics (BUIC E-8)

### Humanities & Social Sciences

- **BSS** (BUKC)
- **BS**-Development Studies (BUIC E-8)
- **BS**-English (BUIC E-8, BULC, BUKC)
- **BS**-International Relations (BUIC E-8)
- **BS**-Public Health (BUIC E-8, BUKC)
- **BS**-Mathematics (BUKC)
- **MS**-Applied Anthropology (BUIC E-8)
- **MS**-Government Public Policy (BUIC E-8)
- **MS**-International Relations (BUIC E-8)
- **MS**-English Linguistic (BUIC E-8)
- **PhD**-International Relations (BUIC E-8)



## Islamic Studies

- **BS**-Islamic Studies (BUIC E-8, BUKC)
- **MS**-Islamic Studies (Islam & Life) (BUIC E-8, BUKC)
- **PhD**-Islamic Studies (BUIC E-8, BUKC)

## Law

- **LLB** (BUIC E-8)
- **LLM** (BUIC E-8)
- **LLM**-International & Maritime Law (BUIC E-8)

## Management Studies

- **BS**-Accounting & Finance (BUIC E-8, BUKC)
- **BS**-Economics (BUIC E-8)
- **BS**-Supply Chain Management (BUIC E-8, BUKC)
- **BS**-Business Analytics (BUKC)
- **BS**-Business & Information Technology (BULC)
- **MPhil**-Management Science (BUIC E-8)
- **MS**-Business Analytics (BUIC E-8)
- **MS**-Finance (BUIC E-8)
- **MS**-Marketing & Sales (BUIC E-8)
- **MS**-Management Sciences (BUIC E-8, BULC)
- **MS**-Project Management (BUIC E-8, BULC, BUKC)
- **MS**-Supply Chain Management (BUIC E-8)
- **MS-HRM & Organizational Psychology** (BUKC)
- **PhD**-Economics (BUIC E-8)
- **PhD**-Management Science (BUIC E-8, BULC, BUKC)

## Media Studies

- **BS**-Media Studies (BUIC E-8, BUKC)
- **BS-TV** Broadcasting & Digital Media (BUIC E-8)
- **MS**-Media Studies (BUIC E-8, BUKC)
- **PhD**-Media Studies (BUIC E-8)

## Psychology

- **AD**- Infant, Child & Adolescent Mental Health) (BUIC H-11, BULC)
- **BS**-Psychology (BUIC E-8, BUIC H-11, IPP-Karachi)

- **MPhil**-Professional Psychology
- **MS**-Clinical Psychology
- **PhD**-Professional Psychology
  - Clinical Psychology
  - Educational Psychology
  - Organizational Psychology

(BUIC E-8, IPP-Karachi)  
(BUIC H-11, BULC, IPP-Karachi)  
(IPP-Karachi)

### Computer Engineering

- **BCE**
- **MS**-Computer Engineering
- **PhD**-Computer Engineering

(BUIC H-11, BUKC)  
(BUIC H-11)  
(BUIC H-11)

### Earth & Environmental Sciences

- **BS**-Environmental Sciences
- **BS**-Geology
- **BS**-Geo Physics
- **BS**-Remote Sensing & GIS
- **MS**-Environmental Science
- **MS**-Geo Physics
- **PhD**-Environmental Sciences
- **PhD**-Geology
- **PhD**-Geo Physics

(BUIC H-11, BUKC)  
(BUIC H-11)  
(BUIC H-11)  
(BUIC H-11, BUKC)  
(BUIC H-11, BUKC)  
(BUIC H-11)  
(BUIC H-11)  
(BUIC H-11)  
(BUIC H-11)

### Electrical Engineering

- **BEE**
- **BS**-Robotics Intelligence Systems
- **MS**-Electrical Engineering
- **PhD**-Electrical Engineering

(BUIC H-11, BUKC)  
(BUIC H-11, BUKC)  
(BUIC H-11, BUKC)  
(BUIC H-11, BUKC)

### Software Engineering

- **BSE**
- **MS**-Engineering Management
- **MS**-Software Engineering
- **PhD**-Software Engineering

(BUIC H-11, BUKC)  
(BUIC H-11)  
(BUIC H-11, BUKC)  
(BUIC H-11, BUKC)

### Maritime Sciences

- **BS**-Maritime & Business Management 2 Years

(BUKC)

- 
- **BS**-Maritime & Business Management 4 Years (BUKC)
  - **MS**-Maritime Ports & Shipping Management (BUKC)
  - **MS**-Maritime Trade & Logistics (BUKC)

### Health Sciences

- **BS**-Nursing (BUHS-KC)
- **DPT** (BUHS-KC)
- **BS**-Bio Technology (BUHS-KC)
- **BS**-MLT (BUHS-KC)
- **MPhil**-Anatomy (BUHS-KC)
- **MPhil**-Bio Chemistry (BUHS-KC)
- **MPhil**- Pharmacology (BUHS-KC)
- **MPhil**- Physiology (BUHS-KC)
- **PhD**-Health Sciences (BUHS-KC)



# Rules and Regulations

## Academic Rules

Bahria University is committed to fulfilling its core academic mission of educating students. At the same time the University must be prepared to respond to provide a framework that will guide the University in enhancing its ability to fulfill its academic mission in the face of potential threats to academic continuity. It is intended to apply to circumstances and events that are potential threats to the continuity of the academic operations of the University and relates entirely to the principles and processes that should guide the University in this context.

## Code of Behavior on Academic Matters

The Academic Council of the University has approved a Code of Behavior on Academic Matters applying to members of the University. The Code of Behavior on Academic Matters addresses the responsibilities of all parties to the integrity of the teaching and learning experience. It concerns the accountability of faculty members and students as they cooperate in all phases of this relationship. Honesty and fairness must inform these activities, the foundation of which is mutual respect for the aims of education and for those ethical principles which characterize the pursuit and transmission of knowledge within the University.

## Code of Student Conduct

Students have an obligation to make legal and responsible decisions concerning their conduct. The University has no general responsibility for the moral and social behavior of its students. In the exercise of its disciplinary authority and

responsibility, the University recognizes that students are free to organize their own personal lives, behavior, and associations subject only to the law and to University regulations that are necessary to protect the integrity and safety of University activities, the peaceful and safe enjoyment of University housing by residents and neighbors, or the freedom of members of the University to participate reasonably in the programs of the University and in activities in or on the University's premises.

## Dress Code

### Male Students

1. Dress/casual trousers
2. Jeans (plain blue) without any images, graphics and writeups
3. Dress/casual shirts (half/full sleeves)
4. T-shirts without any images, messages, graphics and writeups.
5. Dress/casual shoes or joggers with socks. (no sandals)
6. Shalwar qameez with shoes (only on Friday)
7. Suit/combination
8. Coat/pullover/sweater/jacket in winter.

### Female Students

1. Shalwar qameez (no sleeveless)
2. Hijaab, abaya, chaddar
3. Full length jeans/trousers with long shirt/kurta (knee length) (no tights)
4. Light jewellery and light make up
5. Shoes, sandals and joggers
6. Dupatta/scarf compulsory with all dresses.

**Note:** BUHS students should wear white coat with colour coded (collar/sleeves) as appropriate



# BAHRIA BUSINESS SCHOOL

## DEPARTMENT OF BUSINESS STUDIES

### **Programs offered:**

- BBA (4 Years)
- MBA (1.5 Years)
- MBA (2 Years)
- MBA (Pharmaceutics & Health Management)

## BBA (4 Years)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

Intermediate or it's equivalent with a minimum of 50% marks (excluding NCC) in any discipline.

### Road Map BBA (4 Years)

#### Semester 1:

| Sr. #              | Course Code | Course Title                           | Credit Hours |     |
|--------------------|-------------|----------------------------------------|--------------|-----|
|                    |             |                                        | Theory       | Lab |
| 1                  | ENG 101     | Functional English                     | 3            |     |
| 2                  | MKT 110     | Principle of Marketing                 | 3            |     |
| 3                  | MGT 111     | Principles of Management               | 3            |     |
| 4                  | QTM 122     | Business Mathematics & Numeracy Skills | 3            |     |
| 5                  | MIS 161     | IT in Business (word, excel)           | 3            |     |
| 6                  | ECO 110     | Microeconomics                         | 3            |     |
| 7                  | ISL 107     | Tajveed                                | 0            |     |
| Total Credit Hours |             |                                        | 18           |     |

**Semester 2:**

| Sr. #              | Course Code | Course Title                                   | Credit Hours |     |
|--------------------|-------------|------------------------------------------------|--------------|-----|
|                    |             |                                                | Theory       | Lab |
| 1                  | ENG 102     | English Writing Skills                         | 3            |     |
| 2                  | SOC 212     | Critical and Logic Thinking                    | 3            |     |
| 3                  | ECO 121     | Macroeconomics                                 | 3            |     |
| 4                  | ENV 120     | Introduction to Environment and Sustainability | 3            |     |
| 5                  | QTM 110     | Business Statistics                            | 3            |     |
| 6                  | ACC 101     | Principles of Accounting                       | 3            |     |
| 7                  | ISL 108     | Understanding Quran-I                          | 0            |     |
| Total Credit Hours |             |                                                | 18           |     |

**Semester 3:**

| Sr. # | Course Code | Course Title                                    | Credit Hours |     |
|-------|-------------|-------------------------------------------------|--------------|-----|
|       |             |                                                 | Theory       | Lab |
| 1     | ENG 213     | Oral Communication                              | 3            |     |
| 2     | QTM 205     | Statistical Inference and Quantitative Research | 3            |     |
| 3     | ACC 102     | Financial Accounting                            | 3            |     |
| 4     | HSS 403     | Pakistan and Geo-politics Studies               | 2            |     |
| 5     | HSS 219     | Civic and Community Engagement                  | 3            |     |

|                    |                   |                                         |    |  |
|--------------------|-------------------|-----------------------------------------|----|--|
| 6                  | ISL 201 / SOC 360 | Islamic Socio-Economic Studies / Ethics | 2  |  |
| 7                  | ISL 109           | Understanding Quran-ii                  | 0  |  |
| Total Credit Hours |                   |                                         | 18 |  |

#### Semester 4:

| Sr. #              | Course Code | Course Title                       | Credit Hours |     |
|--------------------|-------------|------------------------------------|--------------|-----|
|                    |             |                                    | Theory       | Lab |
| 1                  | HSS 202     | Introduction to Sociology          | 3            |     |
| 2                  | MKT231      | Marketing Management               | 3            |     |
| 3                  | MGT 242     | Organizational Theory and Behavior | 3            |     |
| 4                  | MGT 363     | Entrepreneurship                   | 3            |     |
| 5                  | FIN 201     | Fundamentals of Finance            | 3            |     |
| 6                  | HRM253      | Human Resource Management          | 3            |     |
| 7                  | ISL 110     | Understanding Quran-iii            | 0            |     |
| Total Credit Hours |             |                                    | 18           |     |

#### Semester 5:

| Sr. # | Course Code | Course Title           | Credit Hours |     |
|-------|-------------|------------------------|--------------|-----|
|       |             |                        | Theory       | Lab |
| 1     | ENG 214     | Business Communication | 3            |     |
| 2     | ACC203      | Cost Accounting        | 3            |     |

|       |         |                                      |    |  |
|-------|---------|--------------------------------------|----|--|
| 3     | FIN202  | Financial Management                 | 3  |  |
| 4     | MGT 211 | Self-Management                      | 3  |  |
| 5     | HSS 301 | Social and Psychological Development | 3  |  |
| 6     | MGT 435 | Project Management                   | 3  |  |
| 7     | ISL 111 | Understanding Quran-iv               | 0  |  |
| Total |         |                                      | 18 |  |

### Semester 6:

| Sr. # | Course Code | Course Title                     | Credit Hours |     |
|-------|-------------|----------------------------------|--------------|-----|
|       |             |                                  | Theory       | Lab |
| 1     | ACC304      | Managerial Accounting            | 3            |     |
| 2     | RMT240      | Research Methods& Techniques     | 3            |     |
| 3     | OPM 360     | Operation& Production Management | 3            |     |
| 4     | MGT 301     | Business Law                     | 3            |     |
| 5     | SOC350      | Business Ethics                  | 3            |     |
| 6     | SCM 360     | Supply Chain Management          | 3            |     |
| 7     | ISL 112     | Understanding Quran-v            | 0            |     |
| Total |             |                                  | 18           |     |

**Semester 7:**

| Sr. # | Course Code | Course Title                          | Credit Hours |     |
|-------|-------------|---------------------------------------|--------------|-----|
|       |             |                                       | Theory       | Lab |
| 1     | MGT 311     | Career Exploring Management           | 3            |     |
| 2     | MIS 460     | E-Commerce                            | 3            |     |
| 3     | MIS 461     | Advance Application of IT in Business | 3            |     |
| 4     |             | Specialization-I                      | 3            |     |
| 5     |             | Specialization-II                     | 3            |     |
| 6     | ISL 113     | Seerah-i                              | 0            |     |
| Total |             |                                       | 15           |     |

**Semester 8:**

| Sr. # | Course Code | Course Title       | Credit Hours |     |
|-------|-------------|--------------------|--------------|-----|
|       |             |                    | Theory       | Lab |
| 1     | MGT 643     | Corporate Skills   | 3            |     |
| 2     |             | Specialization-III | 3            |     |
| 3     |             | Specialization-IV  | 3            |     |
| 4     |             | Capstone Project   | 3            |     |
|       | ISL 114     | Seerah-ii          | 0            |     |
| Total |             |                    | 12           |     |

| Sr. # | Course Code | Course Title                   | Credit Hours |     |
|-------|-------------|--------------------------------|--------------|-----|
|       |             |                                | Theory       | Lab |
| 1     |             | Field Experience / Internship* | 3            |     |

\* 6 weeks Internship after 4th Semester

\* Honors, Awards, & Scholarship will be calculated on the basis of coursework only, excluding internship credit hours.

\* Quran and Seerah program is optional for the Non-Muslim students.

| Marketing   |                                      |
|-------------|--------------------------------------|
| Course Code | Subject                              |
| MKT 610     | International Marketing              |
| MKT 655     | Services Marketing                   |
| MKT 660     | Strategic Marketing                  |
| MKT 665     | Cases in Marketing                   |
| MKT 635     | New Product Development              |
| MKT 662     | Brand Management                     |
| MKT 688     | Social Media Marketing               |
| MKT 699     | Consumer Behavior and Psychology     |
| MKT 690     | Integrated Marketing Communication   |
| MKT 650     | Sales Management                     |
| MKT 620     | Marketing Research                   |
| MKT 693     | B to B and Personal Selling          |
| MKT 663     | Promotion and Advertising Management |
| MKT 689     | Digital Marketing                    |
| MKT 691     | Retail and Sales Management          |
| MKT 692     | Export Marketing                     |
| MKT 693     | Marketing Issues in Pakistan         |

|                    |                                                       |
|--------------------|-------------------------------------------------------|
| MKT 694            | Public Rationing and Relationship Marketing           |
| MKT 695            | Agriculture Marketing                                 |
| MKT 603            | Product Management                                    |
| MKT 604            | Distribution Management                               |
| MKT 605            | Digital Analytics                                     |
| MKT 606            | Electronic CRM                                        |
| MKT 697            | Social Marketing                                      |
| MKT 681            | Copy writing Concepts, Protocols and Practices        |
| <b>HRM</b>         |                                                       |
| <b>Course Code</b> | <b>Subject</b>                                        |
| HRM 666            | Negotiations and Conflict Management                  |
| HRM 648            | Organizational Development                            |
| HRM 676            | International Human Resource Management               |
| HRM 677            | Seminars In HRM                                       |
| HRM 689            | Recruitment and Selection                             |
| HRM 679            | Performance Management                                |
| HRM 690            | HRM and HRD                                           |
| HRM 691            | Career Planning and Strategic Compensation Management |
| HRM 660            | Training and Development                              |
| HRM 670            | HR Planning                                           |
| HRM 664            | Job Analysis and Design                               |
| HRM 649            | HR Research Methods                                   |
| HRM 682            | Industrial Relations and Employment Laws              |

|                    |                                              |
|--------------------|----------------------------------------------|
| HRM 671            | HR Information Systems                       |
| HRM 681            | Strategic HRM                                |
| HRM 665            | HR Theory and Practice                       |
| HRM 692            | Organizational Psychology                    |
| HRM 695            | HR Analytics                                 |
| <b>Finance</b>     |                                              |
| <b>Course Code</b> | <b>Subject</b>                               |
| FIN 690            | Financial Modeling                           |
| FIN 698            | Strategic Finance                            |
| FIN 612            | Analysis of Financial Statements             |
| FIN 619            | Financial Derivatives                        |
| FIN 611            | Corporate Finance                            |
| FIN 692            | Financial Markets and Institutions           |
| FIN 693            | Cases in Corporate Finance                   |
| FIN 694            | Money and Banking                            |
| FIN 695            | Investment Analysis and Portfolio Management |
| FIN 635            | Management Corporate Turnaround              |
| FIN 696            | Financial Reporting                          |
| FIN 697            | Taxation and Auditing                        |
| ACC 622            | Accounting Information Systems               |
| FIN 682            | Corporate Restructuring                      |
| FIN 688            | Islamic Finance Theory and Practices         |

|                         |                                              |
|-------------------------|----------------------------------------------|
| FIN 649                 | Islamic Banking and Finance                  |
| ACC 608                 | Advanced Corporate Reporting                 |
| FIN 616                 | Management of Financial Institution          |
| FIN 600                 | Entrepreneurial Finance                      |
| FIN 601                 | Debt Capital Markets                         |
| FIN 608                 | Mutual and Pension Funds                     |
| FIN 604                 | Equity Capital Markets                       |
| FIN 665                 | Behavioral Finance and Wealth Management     |
| FIN 625                 | Commodities and Derivatives Markets          |
| FIN 461                 | Fundamentals of Behavioral Finance           |
| <b>Entrepreneurship</b> |                                              |
| <b>Course Code</b>      | <b>Subject</b>                               |
| ENT 602                 | Cases in Entrepreneurship                    |
| ENT 603                 | Developing New Products and Services         |
| ENT 620                 | Entrepreneurial Strategy in Emerging Markets |
| ENT 606                 | Innovations and Entrepreneurship             |
| ENT 607                 | Managing Entrepreneurial Firms               |
| ENT 608                 | Social Responsibility and Entrepreneurship   |
| ENT 622                 | Business Growth and Entrepreneurial Finance  |
| ENT 612                 | Entrepreneurial Marketing                    |
| ENT 613                 | Organizations and Leading Change             |
| ENT 614                 | Economic of Location and Transportation      |

|                    |                                                   |
|--------------------|---------------------------------------------------|
| ENT 621            | Retailing and International Entrepreneurship      |
| ENT 617            | Corporate Entrepreneurship                        |
| ENT 619            | Technology Entrepreneurship                       |
| <b>MIS</b>         |                                                   |
| <b>Course Code</b> | <b>Subject</b>                                    |
| MIS 655            | Database Management System                        |
| MIS 620            | System Analysis and Design                        |
| MIS 679            | Enterprise Resource Planning (ERP) Implementation |
| MIS 672            | Web Application Development                       |
| MIS 625            | Business Process Re-Engineering                   |
| MIS 680            | Data Communication and Networking                 |
| MIS 681            | Information Security and System Auditing          |
| MIS 657            | Knowledge Management Systems and Technologies     |
| MIS 658            | Business Intelligence and Decisions Support       |
| MIS 608            | Digital Analytics                                 |
| MKT 607            | Electronic CRM                                    |
| <b>SCM</b>         |                                                   |
| <b>Course Code</b> | <b>Subject</b>                                    |
| SCM 619            | Strategic SCM                                     |
| OPM 611            | Operations and Production Management              |
| SCM 650            | Total Quality Management                          |
| SCM 600            | Inventory Management                              |



|         |                                              |
|---------|----------------------------------------------|
| SCM 614 | Strategic Operation Management               |
| SCM 615 | Sourcing and Logistics Management            |
| SCM 616 | Supply Chain Modeling                        |
| SCM 617 | Demand Forecasting                           |
| SCM 618 | Pricing In SCM                               |
| SCM 520 | Purchasing                                   |
| SCM 630 | Strategic Procurement in Supply Chain        |
| SCM 631 | Operational Planning in Supply Chain         |
| SCM 632 | Execution and Control of Operations in SCM   |
| SCM 633 | Master Planning of Resources in SCM          |
| SCM 634 | Detailed Scheduling and Planning In SCM      |
| SCM 635 | Strategic Management of Resources In SCM     |
| SCM 636 | Green Supply Chain Management – GSCM         |
| SCM 637 | Shipping in SCM                              |
| SCM 639 | Operational Planning in Supply Chain         |
| SCM 638 | Supply Chain Strategy, Design and Compliance |
| SCM 640 | Supply Chain Implementation and Operations   |
| SCM 641 | Fundamentals of Supply Chain Management      |
| SCM 621 | Operations Research                          |

| <b>Maritime Management (Specialization / Standalone Electives): 3 CH each.</b> |                                                           |
|--------------------------------------------------------------------------------|-----------------------------------------------------------|
| <b>Course Code</b>                                                             | <b>Course Title</b>                                       |
| MTM 101                                                                        | Introduction to Maritime Industry                         |
| MTM 230                                                                        | Introduction to Maritime Law and International Maritime   |
|                                                                                | Convention                                                |
| MTM 202                                                                        | Economics of Sea Transport & International Trade          |
| MTM 222                                                                        | Introduction to Coastal Zone Management                   |
| MTM 304                                                                        | Port Operations and Management                            |
| MTM 306                                                                        | Shipping Operations and Management                        |
| MTM 322                                                                        | Fisheries Resources & Management                          |
| MTM 401                                                                        | Coastal Eco-Tourism Development and Management            |
| MTM 403                                                                        | Maritime Innovation & Entrepreneurship                    |
| MTM 501                                                                        | Maritime Business: China Pakistan Perspective under CPEC  |
| MTM 521                                                                        | Maritime Business and HRM                                 |
| MTM 504                                                                        | Maritime Management: Concept and Applications             |
| MTM 505                                                                        | Contemporary Issues of Maritime Management                |
| MTM 506                                                                        | Maritime Management in Pakistan: Past, Present and Future |
| HRM 508                                                                        | Marine Environments and Administration                    |
| ECO 363                                                                        | Introduction to Blue and Green Economy                    |
| <b>Foreign Language</b>                                                        |                                                           |
| CLE 401                                                                        | Chinese Language                                          |

## MBA (1.5 Years)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Evening & Weekend

**Eligibility Criteria:** The candidates with BBA (4 Years), ACCA, CA, ACMA, B.Com (4 Years), BS ( A & F ), MCom and MPA with the minimum of 50% marks or CGPA 2.0/4.0 is eligible for admission.

### Road Map MBA (1.5 Years)

#### Semester 1

| Course Code | Course Title                                     | C. Hrs |
|-------------|--------------------------------------------------|--------|
| MGT 748     | Strategic Management                             | 3      |
| FIN 703     | Corporate Finance                                | 3      |
| MGT 745     | Corporate Leadership and Social Responsibilities | 3      |
|             | Specialization I                                 | 3      |

#### Semester 2

| Course Code | Course Title                        | C. Hrs |
|-------------|-------------------------------------|--------|
| MKT 702     | Contemporary Issues in Business     | 3      |
| THS 799     | Dissertation (Proposal Development) | 3      |
|             | Specialization II                   | 3      |
|             | Specialization III                  | 3      |

#### Semester 3

| Course Code | Course Title                | C. Hrs |
|-------------|-----------------------------|--------|
| THS 799     | Thesis Write up and Defense | 3      |
|             | Specialization IV           | 3      |

## MBA (2 Years)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening & Weekend

**Eligibility Criteria:**

16 years education with the minimum of 50% marks or CGPA 2.0/4.0 in any discipline.

### Road Map MBA (2 Years)

#### MBA 2 Years 60 Cr Hrs 33 ACM

| Sr.                 | Courses                             | Course Code | Credit Hrs |
|---------------------|-------------------------------------|-------------|------------|
| <b>Semester-I</b>   |                                     |             |            |
| 1                   | Marketing Management                | MKT 522     | 3          |
| 2                   | Financial Accounting                | ACC 501     | 3          |
| 3                   | Theories & Practices of Management  | MGT 501     | 3          |
| 4                   | Business Communication              | BCM 512     | 3          |
| 5                   | Stats & Math for Management         | QTM 503     | 3          |
| <b>Semester-II</b>  |                                     |             |            |
| 6                   | Human Resource Management           | MGT 541     | 3          |
| 7                   | Cost & Managerial Accounting        | ACC 503     | 3          |
| 8                   | Economics                           | ECO 520     | 3          |
| 9                   | Financial Management                | FIN 502     | 3          |
| 10                  | Methods in Business Research        | MGT 620     | 3          |
| <b>Semester-III</b> |                                     |             |            |
| 11                  | Strategic Management                | MGT 662     | 3          |
| 12                  | Corporate Finance                   | FIN 611     | 3          |
| 13                  | Dissertation (Proposal Development) | SDW 694     | 3          |
| 14                  | Specialization-I                    | Majors      | 3          |
| 15                  | Specialization-II                   | Majors      | 3          |

| <b>Semester -IV</b> |                                              |         |   |
|---------------------|----------------------------------------------|---------|---|
| 16                  | Corporate Leadership & Social Responsibility | MKT 653 | 3 |
| 17                  | Contemporary Issues in Business              | MKT 600 | 3 |
| 18                  | Thesis Write up & Defense                    | SDW 696 | 3 |
| 19                  | Specialization-III                           | Majors  | 3 |
| 20                  | Specialization-IV                            | Majors  | 3 |

### **Electives:**

| <b>Marketing</b>                 |                                             |         |   |
|----------------------------------|---------------------------------------------|---------|---|
| 1                                | International Marketing                     | MKT 610 | 3 |
| 2                                | Services Marketing                          | MKT 655 | 3 |
| 3                                | Strategic Marketing                         | MKT 660 | 3 |
| 4                                | Cases in Marketing                          | MKT665  | 3 |
| 5                                | New Product Development                     | MKT635  | 3 |
| 6                                | Brand Management                            | MKT662  | 3 |
| 7                                | Social Media Marketing                      | MKT699  | 3 |
| 8                                | Consumer Behavior And Psychology            | MKT696  | 3 |
| 9                                | Marketing Research                          | MKT620  | 3 |
| 10                               | Integrated Marketing Communication          | MKT 698 | 3 |
| 11                               | Sales Management                            | MKT 650 | 3 |
| 12                               | Marketing Research                          | MKT 620 | 3 |
| 13                               | B to B and Personal Selling                 | MKT 672 | 3 |
| 14                               | Promotion and Advertising Management        | MKT 663 | 3 |
| 15                               | Digital Marketing                           | MKT 689 | 3 |
| 16                               | Retail and Sales Management                 | MKT 691 | 3 |
| 17                               | Export Marketing                            | MKT 692 | 3 |
| 18                               | Marketing Issues in Pakistan                | MKT 693 | 3 |
| 19                               | Public Rationing and Relationship Marketing | MKT 694 | 3 |
| 20                               | Agriculture Marketing                       | MKT695  | 3 |
| 21                               | Digital Analytics                           | MKT 605 | 3 |
| 22                               | Electronic CRM                              | MKT607  | 3 |
| <b>Human Resource Management</b> |                                             |         |   |
| 21                               | Negotiations And Conflict Management        | HRM 666 | 3 |
| 22                               | Organizational Development                  | HRM 648 | 3 |
| 23                               | International Human Resource Management     | HRM 676 | 3 |
| 24                               | Seminars in HRM                             | HRM 677 | 3 |
| 25                               | Recruitment and Selection                   | HRM 689 | 3 |

|                |                                                       |         |   |
|----------------|-------------------------------------------------------|---------|---|
| 26             | Performance Management                                | HRM 679 | 3 |
| 27             | HRM & HRD                                             | HRM 690 | 3 |
| 28             | Career Planning And Strategic Compensation Management | HRM 691 | 3 |
| 29             | Training And Development                              | HRM 660 | 3 |
| 30             | HR Planning                                           | HRM 670 | 3 |
| 31             | Job Analysis and Design                               | HRM 664 | 3 |
| 32             | HR Research Methods                                   | HRM 649 | 3 |
| 33             | Industrial Relations and Employment Laws              | HRM 682 | 3 |
| 34             | HR Information Systems                                | HRM 671 | 3 |
| 35             | Strategic HRM                                         | HRM 681 | 3 |
| 36             | HR Theory and Practice                                | HRM 665 | 3 |
| 37             | Organizational Psychology                             | HRM 692 | 3 |
| <b>Finance</b> |                                                       |         |   |
| 38             | Financial Modeling                                    | FIN 690 | 3 |
| 39             | Strategic Finance                                     | FIN 698 | 3 |
| 40             | Analysis of Financial Statements                      | FIN 612 | 3 |
| 41             | Financial Derivatives                                 | FIN 619 | 3 |
| 42             | Corporate Finance                                     | FIN 611 | 3 |
| 43             | Financial Markets and Institutions                    | FIN 692 | 3 |
| 44             | Cases in Corporate Finance                            | FIN 693 | 3 |
| 45             | Money and Banking                                     | FIN 694 | 3 |
| 46             | Investment Analysis and Portfolio Management          | FIN 695 | 3 |
| 47             | Management Corporate Turnaround                       | FIN 635 | 3 |
| 48             | Financial Reporting                                   | FIN 696 | 3 |
| 49             | Taxation and Auditing                                 | FIN 697 | 3 |
| 50             | Accounting Information Systems                        | ACC 622 | 3 |
| 51             | Corporate Restructuring                               | FIN 682 | 3 |
| 52             | Islamic Finance Theory and Practices                  | FIN 688 | 3 |
| 53             | Islamic Banking and Finance                           | FIN 662 | 3 |
| 54             | Corporate Law                                         | ACC-609 | 3 |
| 55             | Advanced Corporate Reporting                          | ACC-608 | 3 |
| 56             | Financial Institution Management                      | FIN 649 | 3 |
| 57             | Commodities & Derivatives Markets                     | FIN 625 | 3 |
| 58             | Debt Capital Markets                                  | FIN 605 | 3 |

|                                |                                              |         |   |
|--------------------------------|----------------------------------------------|---------|---|
| 59                             | Equity Capital Markets                       | FIN 604 | 3 |
| 60                             | Behavioral Finance & Wealth Management       | FIN 665 | 3 |
| 61                             | Entrepreneurian Finance                      | FIN 603 | 3 |
| <b>Entrepreneurship</b>        |                                              |         |   |
| 57                             | Cases in Entrepreneurship                    | ENT 602 | 3 |
| 58                             | Developing New Products and Services         | ENT 603 | 3 |
| 59                             | Entrepreneurial Strategy in Emerging Markets | ENT 620 | 3 |
| 60                             | Innovations and Entrepreneurship             | ENT 606 | 3 |
| 61                             | Managing Entrepreneurial Firms               | ENT 607 | 3 |
| 62                             | Social Responsibility and Entrepreneurship   | ENT 608 | 3 |
| 63                             | Business Growth and Entrepreneurial Finance  | ENT 621 | 3 |
| 64                             | Entrepreneurial Marketing                    | ENT 612 | 3 |
| 65                             | Organizations and Leading Change             | ENT 613 | 3 |
| 66                             | Economic of Location and Transportation      | ENT 614 | 3 |
| 67                             | Retailing and International Entrepreneurship | ENT 622 | 3 |
| 68                             | Corporate Entrepreneurship                   | ENT 617 | 3 |
| 69                             | Technology Entrepreneurship                  | ENT 619 | 3 |
| <b>MIS</b>                     |                                              |         |   |
| 70                             | Database Management System                   | IT 655  | 3 |
| 71                             | System Analysis and Design                   | IT 620  | 3 |
| 72                             | Enterprise Resource Planning (ERP) IMP.      | IT679   | 3 |
| 73                             | Web Application Development                  | IT672   | 3 |
| 74                             | Business Process Re-Engineering              | IT 625  | 3 |
| 75                             | Data Communication and Networking            | IT 680  | 3 |
| 76                             | Information Security and System Auditing     | IT 681  | 3 |
| 77                             | Knowledge Management Systems and Tech.       | IT 657  | 3 |
| 78                             | Business Intelligence and Decisions Support  | IT 658  | 3 |
| <b>Supply Chain Management</b> |                                              |         |   |
| 79                             | Strategic SCM                                | SCM 619 | 3 |
| 80                             | Operations and Production Management         | OPM 611 | 3 |
| 81                             | Total Quality Management                     | SCM 650 | 3 |
| 82                             | Inventory Management                         | SCM 600 | 3 |
| 83                             | Strategic Operation Management               | SCM 614 | 3 |
| 84                             | Sourcing and Logistics Management            | SCM 615 | 3 |
| 85                             | Supply Chain Modeling                        | SCM 616 | 3 |
| 86                             | Demand Forecasting                           | SCM 617 | 3 |

|     |                                              |         |   |
|-----|----------------------------------------------|---------|---|
| 87  | Pricing in SCM                               | SCM 618 | 3 |
| 88  | Purchasing                                   | SCM 520 | 3 |
| 89  | Strategic Procurement in Supply Chain        | SCM-630 | 3 |
| 90  | Operational Planning in Supply Chain         | SCM-631 | 3 |
| 91  | Execution and Control of Operations in SCM   | SCM-632 | 3 |
| 92  | Master Planning of Resources in SCM          | SCM-633 | 3 |
| 93  | Detailed Scheduling and Planning in SCM      | SCM-634 | 3 |
| 94  | Strategic Management of Resources in SCM     | SCM-635 | 3 |
| 95  | Green Supply Chain Management – GSCM         | SCM 636 | 3 |
| 96  | Shipping in SCM                              | SCM-637 | 3 |
| 97  | Operational Planning in Supply Chain         | SCM-639 | 3 |
| 98  | Supply Chain Strategy, Design and Compliance | SCM-638 | 3 |
| 99  | Supply Chain Implementation and Operations   | SCM-640 | 3 |
| 100 | Fundamentals of Supply Chain Management      | SCM-701 | 3 |

## **MBA (Pharmaceutical and Health Management)**

**Campus:** Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Weekend

### **Eligibility Criteria:**

MBA (2 Years) Sixteen Years Of Non-Business Education MS(F) & MS (PM) Additionally, applicants must provide HEC verification of all academic certificates / degrees.

## **Road Map of MBA (Pharmaceutical and Health Management)**

### **Semester 1**

| S/No | Codes   | Course                                             | Level | CH | Pre-requisite |
|------|---------|----------------------------------------------------|-------|----|---------------|
| 1    | HRP 701 | Contemporary HRM and Practices                     | Core  | 3  |               |
| 2    | HRP 702 | Personnel Selection and Advanced Counseling Skills | Core  | 3  |               |
| 3    | HRP 703 | Organizational Psychology and Psychometrics        | Core  | 3  |               |

## Semester 2

| S/No | Codes   | Course                                       | Level          | CH | Pre-requisite |
|------|---------|----------------------------------------------|----------------|----|---------------|
| 1    | HRP 704 | Applied Attitude and Behavioral Analysis     | Core           | 3  |               |
| 2    | HRP 705 | Contemporary Issues in Business and Industry | Core           | 3  |               |
| 3    | HRP XXX | Elective-I                                   | Specialization | 3  |               |

| S/No | Codes   | Course                                                | Level          | CH | Pre-requisite |
|------|---------|-------------------------------------------------------|----------------|----|---------------|
| 1    | HRP 708 | Advance Research Methodology and Proposal Development | Core           | 3  |               |
| 2    | HRP XXX | Elective-II                                           | Specialization | 3  |               |
| 3    | HRP XXX | Elective-III                                          | Specialization | 3  |               |

## Semester 4:

| S/No | Codes   | Course          | Level | CH | Pre-requisite |
|------|---------|-----------------|-------|----|---------------|
| 1    | HRP 719 | Internship      | Core  | 3  |               |
| 2    | HRP 700 | Research Thesis | Core  | 6  |               |

## List of Electives

| S/No | Codes   | Title of the Course                                           | CH | Remarks |
|------|---------|---------------------------------------------------------------|----|---------|
| 1.   | HRP 709 | Leadership Issues in Organizations: Concepts and Applications | 3  |         |
| 2.   | HRP 710 | Theories of Learning and Conditioning                         | 3  |         |
| 3.   | HRP 711 | Communication Strategies of Scholars                          | 3  |         |
| 4.   | HRP 712 | Seminars in Organizational Behaviors                          | 3  |         |
| 5.   | HRP 713 | Culture and Persuasion                                        | 3  |         |
| 6.   | HRP 714 | Social and Self-Development                                   | 3  |         |
| 7.   | HRP 715 | Abnormal Psychology                                           | 3  |         |
| 8.   | HRP 716 | Industrial Relations and Labor Laws                           | 3  |         |
| 9.   | HRP 717 | Seminars in Organizational Development                        | 3  |         |
| 10.  | HRP 718 | Seminars in Human Resource Development                        | 3  |         |



## DEPARTMENT OF MANAGEMENT STUDIES

### Programs offered:

- BS (Business Analytics)
- BS Accounting & Finance (4 Years)
- BS Economics (4 Years)
- BS Economics & Finance (4 Years)
- BS SCM (4 Years)
- ADP (Business Administration)
- M.Phil (MS)
- MS Economics
- MS (FINANCE)
- MS (MS)
- MS (PM)
- MS (Supply Chain Management)
- MS (HRM & Organizational Psychology)
- MS (Business Analytics)
- PhD (Management Sciences)
- PhD (Economics)

### BS (Business Analytics)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

#### Eligibility Criteria:

HSSC / Equivalent with 50% Marks

### Road Map of Business Analytics

### Semester 1:

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                          | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------|---------------------------------------|--------------|--------|--------------|
| 1.      |                           | ENG-105     | Functional English 1                  | 3            | 3      |              |
| 2.      |                           | QTM-101     | Business Maths I                      | 3            | 3      |              |
| 3.      |                           | BA-101      | Business Economics I                  | 3            | 3      |              |
| 4.      |                           | MIS-161     | IT in Business                        | 3            | 2      | 1            |
| 5.      |                           | MGT-111     | Principles of Management              | 3            | 3      |              |
| 6.      |                           | BA-102      | Introduction to Technology Management | 3            | 3      |              |

### Semester 2:

| Sr. No. | Pre-requisite Course Code | Course Code       | Course Title                          | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------------|---------------------------------------|--------------|--------|--------------|
| 7.      | ENG-105                   | ENG - 106         | Functional English - II               | 3            | 3      |              |
| 8.      | QTM-101                   | QTM-120           | Business Maths II (Calculus)          | 3            | 3      |              |
| 9.      |                           | QTM-110           | Business Statistics                   | 3            | 3      |              |
| 10.     |                           | ISL201/<br>SOC360 | Islamic Socio Economic Studies/Ethics | 3            | 3      |              |
| 11.     |                           | BA-103            | Programming Fundamentals              | 3            | 2      | 1            |
| 12.     | MIS-161                   | BA-104            | Fundamentals of Business Analytics    | 3            | 2      | 1            |

### Semester 3:

| Sr. No. | Pre-requisite Course Code | Course Code     | Course Title                            | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-----------------|-----------------------------------------|--------------|--------|--------------|
| 13      | BA-101                    | BA -201         | Business Economics II                   | 3            | 3      |              |
| 14      | QTM-120                   | GSC 121         | Linear Algebra                          | 3            | 3      |              |
| 15      |                           | MKT-110         | Principles of Marketing                 | 3            | 3      |              |
| 16      |                           | ACC-110         | Accounting for Business Analytics       | 3            | 3      |              |
| 17      |                           | BA-202          | Data Structure and Business Application | 3            | 2      | 1            |
| 18      |                           | PSY-101/HSS-402 | Introduction to Psychology/Sociology    | 3            | 3      |              |

### Semester 4:

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                       | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------|----------------------------------------------------|--------------|--------|--------------|
| 19      | MGT-111                   | HRM - 353   | Human Resource Management                          | 3            | 3      |              |
| 20      | ACC-110                   | FIN-201     | Fundamentals of Finance                            | 3            | 3      |              |
| 21      | QTM-110                   | QTM - 205   | Statistical Interference and Quantitative Research | 3            | 2      | 1            |
| 22      |                           | CSC 419     | Fundamentals of Machine Learning                   | 3            | 2      | 1            |
| 23      |                           | BA-203      | Database Management System                         | 3            | 2      | 1            |
| 24      |                           | HSS-403     | Pakistan and Geo-politics Studies                  | 3            | 3      |              |

## Semester 5:

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                  | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------|-------------------------------|--------------|--------|--------------|
| 25      | MGT-111                   | MGT-626     | Project Management            | 3            | 3      |              |
| 26      |                           | CSC 452     | Business Data and Text Mining | 3            | 2      | 1            |
| 27      |                           | MGT-363     | Entrepreneurship              | 3            | 3      |              |
| 28      |                           | BA-301      | E-Commerce                    | 3            | 2      | 1            |
| 29      |                           | BA-302      | Web Application Development   | 3            | 2      | 1            |
| 30      |                           | BA-303      | Digital Analytics             | 3            | 2      | 1            |

## Semester 6:

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                           | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------|--------------------------------------------------------|--------------|--------|--------------|
| 31      |                           | RMT-240     | Research Methods and Techniques                        | 3            | 3      |              |
| 32      |                           | SCM 306     | Fundamentals of Operations and Supply Chain Management | 3            | 3      |              |
| 33      |                           | BA-304      | Decision Science for Business                          | 3            | 2      | 1            |
| 34      |                           | SOC - 212   | Critical and Logical Thinking                          | 3            | 3      |              |
| 35      |                           | CSC 412     | Artificial Intelligence                                | 3            | 2      | 1            |
| 36      |                           | CLE 401     | Foreign Language (Chinese Language)                    | 3            | 3      |              |

## Semester 7:

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                   | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------|------------------------------------------------|--------------|--------|--------------|
| 37      |                           | BA-401      | Legal and Ethical Issues in Business Analytics | 3            | 3      |              |
| 38      |                           | BA-402      | Predictive Analysis                            | 3            | 2      | 1            |
| 39      |                           | BA-403      | Capstone Project I                             | 3            | 2      | 1            |
| 40      |                           |             | Elective -I                                    | 3            | 2      | 1            |
| 41      |                           |             | Elective -III                                  | 3            | 2      | 1            |
| 37      |                           | BA-401      | Legal and Ethical Issues in Business Analytics | 3            | 3      |              |

## Semester 8:

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                             | Credit Hours | Theory | Lab (If any) |
|---------|---------------------------|-------------|------------------------------------------|--------------|--------|--------------|
| 42      |                           | BA-404      | Information Security and System Auditing | 3            | 2      | 1            |
| 43      |                           | BA-405      | Data Management and Visualization        | 3            | 2      | 1            |
| 44      |                           | BA-406      | Capstone Project II                      | 3            | 2      | 1            |
| 45      |                           |             | Elective -III                            | 3            | 2      | 1            |
| 46      |                           |             | Elective -IV                             | 3            | 2      | 1            |
| 42      |                           | BA-404      | Information Security and System Auditing | 3            | 2      | 1            |



## **BS Accounting & Finance (4 Years)**

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

Intermediate or it's equivalent with a minimum of 50% marks in any discipline.

### **Road Map A&F (4 Years)**

\*Choose Elective Courses of Finance from any list of Finance Electives of BBA, MBA and BS (A&F)



## Semester 1

| Course Code      | Course Title                           | Credit Hours |
|------------------|----------------------------------------|--------------|
| ENG 101          | Functional English                     | 3            |
| QTM 122          | Business Mathematics & Numeracy Skills | 3            |
| ECO 110          | Microeconomics                         | 3            |
| PAK 101          | Pakistan Studies                       | 2            |
| ACC 101          | Principles of Accounting               | 3            |
| ISL 101/ SOC 360 | Islamic Studies/ Ethics                | 2            |
| ISL107           | Tajveed                                | 0            |
| ENG 101          | Functional English                     | 3            |

## Semester 2

| Course Code | Course Title                           | Credit Hours |
|-------------|----------------------------------------|--------------|
| MIS-210     | Introduction to Information Technology | 3            |
| ENG 102     | English Writing Skills                 | 3            |
| HSS-301     | Social and Psychological Development   | 3            |
| ECO 121     | Macroeconomics                         | 3            |
| ACC 102     | Financial Accounting                   | 3            |
| MGT-111     | Principles of Management               | 3            |
| MIS-210     | Introduction to Information Technology | 3            |
| ENG 102     | English Writing Skills                 | 3            |
| ISL 108     | Understanding Quran-I                  | 0            |

### Semester 3

| Course Code | Course Title                                   | Credit Hours |
|-------------|------------------------------------------------|--------------|
| MKT 110     | Principles of Marketing                        | 3            |
| ENV 120     | Introduction to Environment and Sustainability | 3            |
| ACC 203     | Cost Accounting                                | 3            |
| FIN 201     | Introduction to Finance                        | 3            |
| QTM 110     | Business Statistics                            | 3            |
| SOC 212     | Critical and Logical Thinking                  | 3            |
| ISL 109     | Understanding Quran-ii                         | 0            |

### Semester 4

| Course Code | Course Title                   | Credit Hours |
|-------------|--------------------------------|--------------|
| MGT 242     | Organizational Behavior        | 3            |
| MGT 363     | Entrepreneurship               | 3            |
| HRM 353     | Human Resource Management      | 3            |
| ACC 304     | Managerial Accounting          | 3            |
| HSS 219     | Civic and Community Engagement | 2            |
| FIN 202     | Financial Management           | 3            |
| ISL 110     | Understanding Quran-iii        | 0            |

### Semester 5

| Course Code | Course Title                   | Credit Hours |
|-------------|--------------------------------|--------------|
| ACC 400     | Advanced Managerial Accounting | 3            |
| ACC 305     | Financial Reporting-I          | 3            |
| ACC 306     | Principles of Auditing         | 3            |
| ACC 220     | Principles of Taxation         | 3            |
| FIN 306     | Financial Modeling             | 3            |

|         |                        |   |
|---------|------------------------|---|
| MGT 301 | Business Law           | 3 |
| ISL 111 | Understanding Quran-iv | 0 |

### Semester 6

| Course Code | Course Title                                        | Credit Hours |
|-------------|-----------------------------------------------------|--------------|
| FIN 320     | Financial Institution Management                    | 3            |
| FIN 308     | Corporate Finance                                   | 3            |
| ENG 214     | Business Communication                              | 3            |
| ACC 320     | Financial Reporting-II                              | 3            |
| SFI-300     | Introduction to Sustainable Finance and Investments | 3            |
| RMT 240     | Research Methods & Techniques                       | 3            |
| ISL 112     | Understanding Quran-v                               | 0            |

### Semester 7

| Course Code | Course Title      | Credit Hours |
|-------------|-------------------|--------------|
| ACC 410     | Advanced Taxation | 3            |
| ACC 412     | Advanced Auditing | 3            |
| MGT 301     | Business Law      | 3            |
|             | Specialization-I  | 3            |
|             | Specialization-II | 3            |
| ISL 113     | Seerah-i          | 0            |

### Semester 8

| Course Code | Course Title            | Credit Hours |
|-------------|-------------------------|--------------|
| Pro 450     | Capstone Project/Thesis | 3            |
|             | Specialization-III      | 3            |
|             | Specialization-IV       | 3            |

|         |              |   |
|---------|--------------|---|
| ECO 415 | Econometrics | 3 |
| ISL 114 | Seerah-ii    | 0 |

| Course Code | Subject                      | Credit Hours |
|-------------|------------------------------|--------------|
|             | Internship/ Field Experience | 3            |

Note: Internship of 6 weeks after 4th Semester.

**Electives: All electives are of 3 Credit Hours each**

| Course Code | Subject                                     |
|-------------|---------------------------------------------|
| FIN 659     | Advance Financial Management                |
| ACC 623     | Corporate Governance                        |
| ACC 624     | Accounting Information System With SAP      |
| ACC 625     | Mercantile Law                              |
| ACC 626     | Advance IT                                  |
| ACC 627     | Strategic Management Accounting and Control |
| ACC 628     | Tax Management and Optimization             |
| ACC 629     | Actuarial Accounting                        |
| ACC 631     | Merger and Acquisition Accounting           |
| ACC 607     | Advance Financial Reporting                 |
| FIN 646     | Financial Econometrics                      |
| FIN 647     | Financial Restructuring                     |



|         |                                                 |
|---------|-------------------------------------------------|
| FIN 619 | Financial Derivatives                           |
| FIN 648 | International Finance                           |
| FIN 649 | Islamic Banking and Finance                     |
| FIN 650 | Analysis of Financial Time Series               |
| FIN 651 | Financial Information System                    |
| FIN 613 | Portfolio Analysis and Management               |
| FIN 618 | Treasury and Funds Management                   |
| FIN 603 | Entrepreneurial Finance                         |
| FIN 621 | Budgeting                                       |
| FIN 612 | Analysis of Financial Statements                |
| FIN 660 | Branch and Branchless Banking                   |
| FIN 652 | Lending-Products, operation and risk management |
| FIN 653 | Finance of International Trade                  |
| FIN 654 | Marketing of Financial Services                 |
| FIN 655 | Information Technology in Financial Services    |
| FIN 617 | Investment Banking                              |
| FIN 615 | Commercial Banking                              |
| FIN 685 | Business Intelligence                           |
| FIN 684 | Financial Engineering                           |



### Maritime Management (Specialization / Standalone Electives): 3 CH each

| Course Code | Course Title                                                       |
|-------------|--------------------------------------------------------------------|
| MTM 101     | Introduction to Maritime Industry                                  |
| MTM 230     | Introduction to Maritime Law and International Maritime Convention |
| MTM 202     | Economics of Sea Transport & International Trade                   |
| MTM 222     | Introduction to Coastal Zone Management                            |
| MTM 304     | Port Operations and Management                                     |
| MTM 306     | Shipping Operations and Management                                 |
| MTM 322     | Fisheries Resources & Management                                   |
| MTM 401     | Coastal Eco-Tourism Development and Management                     |
| MTM 403     | Maritime Innovation & Entrepreneurship                             |
| MTM 501     | Maritime Business: China Pakistan Perspective under CPEC           |
| MTM 521     | Maritime Business and HRM                                          |
| MTM 504     | Maritime Management: Concept and Applications                      |
| MTM 505     | Contemporary Issues of Maritime Managemnt                          |
| MTM 506     | Maritime Management in Pakistan: Past, Present and Future          |
| HRM 508     | Marine Environments and Administration                             |
| ECO 363     | Introduction to Blue and Green Economy                             |

### Foreign Language

|         |                  |
|---------|------------------|
| CLE 401 | Chinese Language |
|---------|------------------|



## BS-Economics (4 Years)

**Campus:** Islamabad

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

HSSC – II minimum or its equivalent 50% marks A Level.

**Available Specialization:**

1. International Economics
2. Sustainable Development

### Road Map Economics (4 Years)

#### Semester – 1

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
| ENG 101     | Functional English        | 3            |
| QTM 101     | Business Mathematics      | 3            |
| ECO 110     | Microeconomics- I         | 3            |
| MIS 161     | Introduction to IT        | 3            |
| HSS 108     | Introduction to Sociology | 3            |
| MGT 363     | Entrepreneurship          | 3            |
| ISL 107     | Tajweed                   | 0            |

## Semester – 2

| Course Code | Course Title                                   | Credit Hours |
|-------------|------------------------------------------------|--------------|
| ISL 101     | Islamic Studies                                | 2            |
| ENV 120     | Introduction to Environment and sustainability | 3            |
| QTM 105     | Introduction to Statistics                     | 3            |
| ECO 121     | Macroeconomics-I                               | 3            |
| ECO 111     | Microeconomics-II                              | 3            |
| HSS 107     | Introduction to Psychology                     | 3            |
| ISL 108     | Understanding Quran-I                          | 0            |

## Semester – 3

| Course Code | Course Title                               | Credit Hours |
|-------------|--------------------------------------------|--------------|
| SOC 240     | Pakistan Studies                           | 2            |
| ECO 201     | Financial Institutions and Markets         | 3            |
| ECO 122     | Macroeconomics-II                          | 3            |
| ECO 202     | Issues in Pakistan's Economy               | 3            |
| ENG 213     | Oral Communication and Presentation Skills | 3            |
| QTM 232     | Statistical Inference                      | 3            |
| ISL 109     | Understanding Quran-ii                     | 0            |

## Semester – 4

| Course Code | Course Title                         | Credit Hours |
|-------------|--------------------------------------|--------------|
| ECO 301     | Fundamentals of Econometrics         | 3            |
| New         | Introduction to Financial Economics  | 3            |
| ECO 304     | Business Taxation and Public Finance | 3            |
| RMT 240     | Research Methods & Techniques        | 3            |

|         |                                 |   |
|---------|---------------------------------|---|
| ECO 340 | Development Economics           | 3 |
| HSS 219 | Civics and Community Engagement | 2 |
| ISL 110 | Understanding Quran-iii         | 0 |

### **Semester – 5**

| Course Code | Course Title                                | Credit Hours |
|-------------|---------------------------------------------|--------------|
| ECO 306     | International Economics & Finance           | 3            |
| ECO 307     | Money and Banking                           | 3            |
| NEW         | Introduction to Blue and Green Economy      | 3            |
| MGT 311     | Career Exploring                            | 3            |
| ECO 309     | Monetary Theory & Policy                    | 3            |
| ECO 526     | Sustainable Development and Economic Policy | 3            |
| ISL 111     | Understanding Quran-iv                      | 0            |

### **Semester – 6**

| Course Code | Course Title                         | Credit Hours |
|-------------|--------------------------------------|--------------|
| ECO 362     | Managerial Economics                 | 3            |
| HSS 301     | Social and Psychological Development | 3            |
| ECO 401     | Financial Econometrics               | 3            |
| ECO 501     | Banking and Taxation                 | 3            |
| ECO 404     | Money and Capital Markets            | 3            |
| Eco 506     | Poverty and Income distribution      | 3            |
| ISL 112     | Understanding Quran-v                |              |

## Semester – 7

| Course Code | Course Title         | Credit Hours |
|-------------|----------------------|--------------|
| ECO 403     | Trade Policy         | 3            |
| MGT 211     | Self-Management      | 3            |
| ECO 502     | Industrial Economics | 3            |
|             | Elective-I           | 3            |
|             | Elective-II          | 3            |
| ISL 113     | Seerah-i             |              |

## Semester – 8

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
| MGT 463     | Corporate Skills          | 3            |
|             | Elective -III             | 3            |
|             | Elective-IV               | 3            |
| PRO 450     | Capstone Project / Thesis | 3            |
| ISL 114     | Seerah-ii                 |              |

## List of Elective Courses

| Course Code    | Course Title                                          | Credit Hours |
|----------------|-------------------------------------------------------|--------------|
| <b>ECO 536</b> | Globalization and International Trade                 | 3            |
| <b>NEW</b>     | Introduction to Financial Economics                   |              |
| <b>ECO 518</b> | International Business Law                            | 3            |
| <b>ECO 537</b> | International Financial Markets                       | 3            |
| <b>ECO 538</b> | International Logistics and Transportation Management | 3            |



|                |                                                          |   |
|----------------|----------------------------------------------------------|---|
| <b>ECO 539</b> | Foreign Trade and FDI Policies                           | 3 |
| <b>ECO 522</b> | International Corporate Law                              | 3 |
| <b>ECO 523</b> | Global Value chains (GVCs) for Trade                     | 3 |
| <b>ECO 524</b> | World Trade Organization and Regional Trade Facilitation | 3 |
| <b>ECO 525</b> | Asian transport corridors and Trade                      | 3 |
| <b>ECO 502</b> | Industrial Economics                                     | 3 |
| <b>ECO 503</b> | Budgeting and Financial Planning                         | 3 |
| <b>ECO 504</b> | Advanced Topics in Microeconomics                        | 3 |
| <b>ECO 505</b> | Advanced Topics in Macroeconomics                        | 3 |
| <b>ECO 507</b> | International Economics                                  | 3 |
| <b>ECO 508</b> | Labor Economics                                          | 3 |
| <b>ECO 509</b> | Investment Banking & Security Analysis                   | 3 |
| <b>ECO 510</b> | Islamic Economics                                        | 3 |
| <b>ECO 513</b> | Economics of Regulation and Competition Policy           | 3 |

## BS (Economics & Finance)

**Campus:** Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

Intermediate or it's equivalent with a minimum of 50% marks in any discipline.

### Road Map Economics & Finance

#### Semester-1

| S/No | Pre-requisite course code | Course Code | Course Title                   | Credit Hours |
|------|---------------------------|-------------|--------------------------------|--------------|
| 1    |                           | ENG 105     | Functional English             | 3            |
| 2    |                           | QTM 101     | Business Math (for Economists) | 3            |
| 3    |                           | ECO 110     | Microeconomics- I              | 3            |
| 4    |                           | MIS 161     | IT Skills (Word, Excel)        | 3            |
| 5    |                           | HSS 108     | Introduction to Sociology      | 3            |
| 6    |                           | MGT 111     | Principles of Management       | 3            |

#### Semester-2

| S/No | Pre-requisite course code | Course Code | Course Title               | Credit Hours |
|------|---------------------------|-------------|----------------------------|--------------|
| 1    |                           | ISL 101     | Islamic Studies            | 3            |
| 2    |                           | QTM 105     | Introduction to Statistics | 3            |
| 3    |                           | QTM 120     | Numeracy Skills            | 3            |
| 4    |                           | ECO 121     | Macroeconomics-I           | 3            |
| 5    | ECO 110                   | ECO 111     | Microeconomics-II          | 3            |
| 6    |                           | FIN107      | Financial Accounting       | 3            |

### Semester-3

| S/No | Pre-requisite course code | Course Code | Course Title                                | Credit Hours |
|------|---------------------------|-------------|---------------------------------------------|--------------|
| 1    |                           | PAK 101     | Pakistan Studies                            | 3            |
| 2    |                           | ECO 203     | Digitization of Economy and                 | 3            |
|      |                           |             | Artificial Intelligence                     |              |
| 3    | ECO 121                   | ECO 122     | Macroeconomics-II                           | 3            |
| 4    |                           | ECO 202     | Issues in Pakistan's Economy                | 3            |
| 5    | ENG 105                   | ENG 105     | Oral Communication (Public Speaking Skills) | 3            |
| 6    | QTM 101                   | QTM 204     | Statistical Inference                       | 3            |

### Semester-4

| S/No | Pre-requisite course code | Course Code | Course Title                         | Credit Hours |
|------|---------------------------|-------------|--------------------------------------|--------------|
| 1    |                           | FIN 315     | Fundamentals of Econometrics         | <b>3</b>     |
| 2    |                           | ECO 311     | Economics of Entrepreneurs           | 3            |
| 3    |                           | ECO 304     | Business Taxation and Public Finance | 3            |
| 4    |                           | RMT 240     | Research Methods & Techniques        | 3            |
| 5    |                           | FIN 201     | Fundamentals of Finance              | 3            |
| 6    |                           | BCM 304     | Business Communication Skills        | 3            |

### Semester-5

| S/No | Pre-requisite course code | Course Code | Course Title                        | Credit Hours |
|------|---------------------------|-------------|-------------------------------------|--------------|
| 1    |                           | ECO 384     | Financial Management                | 3            |
| 2    | FIN 315                   | FIN 316     | Financial Econometrics and Modeling | 3            |

|   |  |         |                             |   |
|---|--|---------|-----------------------------|---|
| 3 |  | ECO 362 | Managerial Economics        | 3 |
| 4 |  | MGT 311 | Career Exploring Management | 3 |
| 5 |  | ECO 317 | Monetary Theory & Policy    | 3 |

### Semester-6

| S/No | Pre-requisite course code | Course Code | Course Title                         | Credit Hours |
|------|---------------------------|-------------|--------------------------------------|--------------|
| 1    |                           | SCM 361     | Economy and Green SCM                | 3            |
| 2    |                           | HSS 301     | Social and Psychological Development | 3            |
| 3    |                           | FIN 321     | Finance of Emerging Markets          | 3            |
| 4    |                           | FIN 322     | Money and Banking                    | 3            |
| 5    |                           | FIN 323     | Financial Markets                    | 3            |

### Semester-7

| S/No | Pre-requisite course code | Course Code | Course Title                      | Credit Hours |
|------|---------------------------|-------------|-----------------------------------|--------------|
| 1    | RMT 240                   | MGT 401     | Project Management and Evaluation | 3            |
| 2    |                           | MGT 402     | Self-Management                   | 3            |
| 3    |                           |             | Elective-1                        | 3            |
| 4    |                           |             | Elective-2                        | 3            |
| 5    |                           |             | Elective-3                        | 3            |
| 6    |                           |             | Elective-4                        | 3            |

### Semester-8

| S/No | Pre-requisite course code | Course Code | Course Title     | Credit Hours |
|------|---------------------------|-------------|------------------|--------------|
| 1    |                           | MGT 403     | Corporate Skills | 3            |
| 2    |                           |             | Elective-5       | 3            |
| 3    |                           |             | Elective-6       | 3            |
| 4    | RMT 240<br>MGT 401        | SDW 404     | Project / Thesis | 6            |

## List of Elective Courses

| S. No | Course Code | Previous Courses                        | CH |
|-------|-------------|-----------------------------------------|----|
| 1.    | ECO 502     | Industrial Economics                    | 3  |
| 2.    | ECO 503     | Budgeting and Financial Planning        | 3  |
| 3.    | ECO 504     | Advanced Topics in Microeconomics       | 3  |
| 4.    | ECO 505     | Advanced Topics in Macroeconomics       | 3  |
| 5.    | DST 506     | Poverty & Income Distribution           | 3  |
| 6.    | HSS 507     | International Economics                 | 3  |
| 7.    | ECO 508     | Labor Economics                         | 3  |
| 8.    | FIN 509     | Investment Banking & Security Analysis  | 3  |
| 9.    | ECO 510     | Islamic Economics                       | 3  |
| 10.   | ECO 511     | Urban Economics                         | 3  |
| 11.   | ECO 512     | Regulation and Competition Policy       | 3  |
| 12.   | HSS 514     | Union and Labor Laws                    | 3  |
| 13.   | ECO 516     | Agriculture Economics and Food Security | 3  |
| 14.   | ECO 517     | Economic Perspective and Public Policy  | 3  |
| 15.   | MGT 512     | Corporate Law and Governance            | 3  |
| 16.   | ECO 518     | Financial Risk Management               | 3  |
| 17.   | FIN 516     | Introduction to Microfinance            | 3  |
| 18.   | FIN 521     | Introduction to Financial Inclusions    | 3  |
| 19.   | FIN 654     | Marketing Financial Services            | 3  |
| 20.   | FIN 611     | Corporate Finance                       | 3  |
| 21.   | FIN 612     | Analysis of Financial Statement         | 3  |
| 22.   | FIN 615     | Financial derivative                    | 3  |
| 23.   | FIN 613     | Portfolio Analysis and Management       | 3  |
| 24.   | FIN 690     | Financial modeling                      | 3  |

### Maritime Management (Specialization / Standalone Electives)

| S/No | Course Code | Course Title                                                       | Credit Hours |
|------|-------------|--------------------------------------------------------------------|--------------|
| 1.   | MTM 101     | Introduction to Maritime Industry                                  | 3            |
| 2.   | MTM 230     | Introduction to Maritime Law and International Maritime Convention | 3            |
| 3.   | MTM 215     | Economics of Sea Transport & International Trade                   | 3            |
| 4.   | MTM 222     | Introduction to Coastal Zone Management                            | 3            |
| 5.   | MTM 304     | Port Operations and Management                                     | 3            |
| 6.   | MTM 306     | Shipping Operations and Management                                 | 3            |
| 7.   | MTM 322     | Fisheries Resources & Management                                   | 3            |

|     |         |                                                           |   |
|-----|---------|-----------------------------------------------------------|---|
| 8.  | MTM 401 | Coastal Eco-Tourism Development and Management            | 3 |
| 9.  | MTM 403 | Maritime Innovation & Entrepreneurship                    | 3 |
| 10. | MTM 526 | Maritime Business: China Pakistan Perspective under CPEC  | 3 |
| 11. | MTM 521 | Maritime Business and HRM                                 | 3 |
| 12. | MTM 527 | Maritime Management: Concept and Applications             | 3 |
| 13. | MTM 528 | Contemporary Issues of Maritime Management                | 3 |
| 14. | MTM 529 | Maritime Management in Pakistan: Past, Present and Future | 3 |

## BS Supply Chain Management (4 Years)

**Campus:** Islamabad, Karachi

**Program Timing:** Morning

**Program Duration:** 4 Years (8 Semesters)

**Eligibility Criteria:** Intermediate or it's equivalent with a minimum of 50% marks (excluding NCC) in any discipline.

### Road Map of BS (Supply Chain Management)

#### Semester – 1

| Course Code         | Course Title                           | Credit Hours |
|---------------------|----------------------------------------|--------------|
| ENG 101             | Functional English                     | 3            |
| QTM 122             | Business Mathematics & Numeracy Skills | 3            |
| ECO 110             | Microeconomics                         | 3            |
| PAK 101             | Pakistan Studies                       | 2            |
| ISL 101/<br>SOC 360 | Islamic Studies/Ethics                 | 2            |
| MGT111              | Principles of Management               | 3            |
| ISL 107             | Tajveed                                | 0            |



## Semester – 2

| Course Code | Course Title                         | Credit Hours |
|-------------|--------------------------------------|--------------|
| ENG 102     | English Writing Skills               | 3            |
| MIS 163     | IT in SCM                            | 3            |
| HSS-301     | Social and Psychological Development | 3            |
| ACC 102     | Financial Accounting                 | 3            |
| ECO 121     | Macroeconomics                       | 3            |
| SCM 101     | Introduction to SCM                  | 3            |
| ISL 108     | Understanding Quran-I                | 0            |

## Semester – 3

| Course Code | Course Title                                   | Credit Hours |
|-------------|------------------------------------------------|--------------|
| ENV 120     | Introduction to Environment and Sustainability | 3            |
| QTM 110     | Business Statistics                            | 3            |
| ACC 304     | Managerial Accounting                          | 3            |
| SOC 212     | Critical and Logical Thinking                  | 3            |
| MKT 110     | Principles of Marketing                        | 3            |
| SCM 201     | Introduction to Procurement Management         | 3            |
| ISL 109     | Understanding Quran-ii                         | 0            |

## Semester – 4

| Course Code | Course Title                               | Credit Hours |
|-------------|--------------------------------------------|--------------|
| MGT-363     | Entrepreneurship                           | 3            |
| HRM-353     | Human Resource Management                  | 3            |
| FIN 220     | Finance of SC Managers                     | 3            |
| SCM 361     | Introduction to Blue Economy and Green SCM | 3            |
| OPM 360     | Operation and Production Management        | 3            |
| HSS 219     | Civic and Community Engagement             | 2            |
| ISL 110     | Understanding Quran-iii                    | 0            |

## Semester – 5

| Course Code | Course Title                                    | Credit Hours |
|-------------|-------------------------------------------------|--------------|
| MGT 311     | Career Exploring Management                     | 3            |
| MGT 435     | Project Management                              | 3            |
| MIS 310     | SC Analytics and Information System             | 3            |
| MGT 312     | Quality Management and Lean Thinking            | 3            |
| QTM 205     | Statistical Inference and Quantitative Research | 3            |
| SCM 302     | Supply Network Planning and Design              | 3            |
| ISL 111     | Understanding Quran-iv                          | 0            |



## Semester – 6

| Course Code | Course Title                     | Credit Hours |
|-------------|----------------------------------|--------------|
| MGT 211     | Self-Management                  | 3            |
| SCM 320     | Import Export Management         | 3            |
| SCM 321     | Multimodal Transport Management  | 3            |
| SCM 402     | Legal Aspects of Supply Chains   | 3            |
| RMT 240     | Research Methods & Techniques    | 3            |
| SCM 323     | Innovations in SC with Ecommerce | 3            |
| ISL 112     | Understanding Quran-v            | 0            |

## Semester – 7

| Course Code | Course Title                                         | Credit Hours |
|-------------|------------------------------------------------------|--------------|
| SCM 301     | Inventory and Warehouse Management (Shifted from S4) | 3            |
| RMT 360     | Operations Research                                  | 3            |
| SCM 421     | Globalization and Outsourcing Strategies             | 3            |
|             | Specialization-I                                     | 3            |
|             | Specialization-II                                    | 3            |
| ISL 113     | Seerah-i                                             | 0            |

## Semester – 8

| Course Code | Course Title       | Credit Hours |
|-------------|--------------------|--------------|
| MGT 463     | Corporate skills   | 3            |
|             | Specialization-III | 3            |
|             | Specialization-IV  | 3            |
|             | Capstone Project   | 3            |
| ISL 114     | Seerah-ii          | 0            |

### (Internship)

| Course Code | Course Title                      | Credit Hours |
|-------------|-----------------------------------|--------------|
|             | Field Experience*<br>(Internship) | 3            |

\*Quran and Seerah program is optional for the Non-Muslim students.

### List of Elective Courses

| Course Code | Course Title                                   | Credit Hours |
|-------------|------------------------------------------------|--------------|
| SCM654      | Management and Leadership                      | 3            |
| SCM649      | Contemporary Issues in Supply Chain Management | 3            |
| SCM655      | Customer and Supplier Relationship Management  | 3            |
| SCM648      | Entrepreneurship in Supply Chain Management    | 3            |
| SCM647      | ERP and SCM Systems                            | 3            |
| SCM633      | Master planning of Resources in SCM            | 3            |
| SCM617      | Demand Forecasting                             | 3            |
| SCM646      | Business Process Reengineering                 | 3            |
| SCM645      | Contract Management                            | 3            |
| SCM636      | Green Supply Chain Management                  | 3            |
| SCM652      | Shipping, Freights and Port Operations         | 3            |
| SCM654      | Management and Leadership                      | 3            |
| SCM651      | Humanitarian Logistics                         | 3            |
| SCM649      | Contemporary Issues in Supply Chain Management | 3            |
| SCM648      | Entrepreneurship in Supply Chain Management    | 3            |
| SCM647      | ERP and SCM Systems                            | 3            |
| SCM646      | Business Process Reengineering                 | 3            |



|        |                                                                    |   |
|--------|--------------------------------------------------------------------|---|
| SCM653 | Health Safety Environment (HSE) in Warehouse                       | 3 |
| SCM324 | Supply Chain Performance Measurement                               | 3 |
| MTM101 | Introduction to Maritime Industry                                  | 3 |
| MTM230 | Introduction to Maritime Law and International Maritime Convention | 3 |
| MTM215 | Economics of Sea Transport & International Trade                   | 3 |
| MTM222 | Introduction to Coastal Zone Management                            | 3 |
| MTM304 | Port Operations and Management                                     | 3 |
| MTM306 | Shipping Operations and Management                                 | 3 |
| MTM322 | Fisheries Resources & Management                                   | 3 |
| MTM401 | Coastal Eco-Tourism Development and Management                     | 3 |
| MTM403 | Maritime Innovation & Entrepreneurship                             | 3 |
| MTM526 | Maritime Business: China Pakistan Perspective under CPEC           | 3 |
| MTM521 | Maritime Business and HRM                                          | 3 |
| MTM527 | Maritime Management: Concept and Applications                      | 3 |
| MTM528 | Contemporary Issues of Maritime Management                         | 3 |
| MTM529 | Maritime Management in Pakistan: Past, Present and Future          | 3 |
| HRM508 | Marine Environments and Administration                             | 3 |

## MPhil (Management Sciences)

**Campus:** Islamabad & Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

16 Years education, Masters/ Bachelor's Degree with a minimum 50% marks or CGPA 2.0/4.0 in relevant discipline.

Additionally, applicants must provide HEC verification of all academic certificates/ degrees.

### Road Map MPhil (Management Sciences)

#### Semester-1

| Course Code | Course Title                                           | CH |
|-------------|--------------------------------------------------------|----|
| MGT 701     | Philosophies of Administrative Sciences                | 3  |
| MGT 702     | Advanced Research Methodology and Proposal Development | 3  |
| MGT 703     | Seminar in Organizational Analysis                     | 3  |

#### Semester-2

| Course Code | Course Title                         | CH |
|-------------|--------------------------------------|----|
| MGT 704     | Applied Statistical Research Methods | 3  |
| MGT XXX     | Elective-I                           | 3  |
| MGT XXX     | Elective-II                          | 3  |



### Semester-3

| Course Code | Course Title | CH |
|-------------|--------------|----|
| MGT XXX     | Elective-III | 3  |
| MGT XXX     | Elective-IV  | 3  |

### Semester-4

| Course Code | Course Title              | CH |
|-------------|---------------------------|----|
| THS 799     | Thesis / Capstone Project | 6  |

### List of Elective Courses

| Course Code | Course Title                                                          | CH |
|-------------|-----------------------------------------------------------------------|----|
| MGT 710     | Special Topics in Organization al behavior and Management             | 3  |
| MGT 711     | Leadership Issues in Organization s: Concepts and Applications        | 3  |
| MGT 712     | Advanced Marketing Management Concept and Application                 | 3  |
| MGT 713     | Advanced Financial and Management Accounting: Concept and Application | 3  |
| MGT 714     | Business Decision Models: Concepts and Applications                   | 3  |
| MGT 715     | Change Management : Concepts and Applications                         | 3  |



|         |                                                                           |   |
|---------|---------------------------------------------------------------------------|---|
| MGT 715 | Change Management : Concepts and Applications                             | 3 |
| MGT 716 | Buyer Behavior: Concept sand Applications                                 | 3 |
| MGT 717 | Contemporary Issues in international Marketing: Concepts and Applications | 3 |
| MGT 718 | Corporate Governess and Sustainability                                    | 3 |
| MSF 733 | Financial Institutions Management                                         | 3 |
| MGT 720 | International Strategic Management                                        | 3 |
| MGT 721 | Human Resource Management : Concepts and Applications                     | 3 |
| MGT 722 | Managing International Aid and Development                                | 3 |
| MGT 723 | Service Operation Management : Concept and Application                    | 3 |
| MGT 724 | Global Governance                                                         | 3 |
| MGT 725 | Globalization                                                             | 3 |
| MGT 726 | International Business & Economics Perspectives                           | 3 |



|         |                                            |   |
|---------|--------------------------------------------|---|
| MGT 727 | Global Security                            | 3 |
| MGT 728 | Politics of Development & Business Process | 3 |
| MGT 729 | Financial Econometrics                     | 3 |
| MGT 730 | System Thinking in Management              | 3 |

### **Topics for Research in Maritime Domain for MBA/ MS/MPhil/PhD**

1. Shipping Industry of Pakistan: Scope and Dimensions for Development in Global and Regional Perspective
2. Maritime Education and Research: Employment Scope and Development Avenues in Pakistani Perspective under BRI and CPEC
3. Employment and Entrepreneurship Opportunities: Maritime Education and Skill needs of Pakistan in CPEC Scenario of 2025 and Beyond
4. Management of Warehouses: New Trends under Technology Dominance, Pakistan a Case in Point
5. Marine Oil Spill: Past, Present and Future Status of Pakistani Coastal Protection and Disaster Management
6. Port Management under Technology Dominance: Karachi Port Trust and its Significance in
7. Pakistan's Economy

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8. Port Management under Technology Dominance: The Port Muhammad Bin Qasim and its
  9. Significance in Pakistan's Economy
  10. Effective Cargo Management: Managing Shipping Containers at Pakistani Ports, a Case in Point
  11. State of Maritime Container Terminals in Pakistan: Significance of Automated Systems
  12. Shipping Industry in Pakistan: Current Status and its Future in view of CPEC Scenario of 2025-2030
  13. Issues of Port Safety in Pakistan: Management Risks and Solutions as Per International Standards
  14. Boat Construction Dynamics in Pakistan: Its significance and Future in View of CPEC Scenario of 2025-2030.
  15. Gawadar Fish Harbor: Its Significance, Development Prospects and Future under CPEC Expansions
  16. Maritime Security: Current Status and its Future In view of BRI and CPEC Scenario of 2030.
  17. Pakistan and China Collaborations for Enhancing Growth of Maritime industry in Pakistan.
  18. Entrepreneurship, Innovation and Finance for Sustainable Development and Exploration of Maritime resources.
  19. Challenges Expected to be Faced By Developing Countries After the Decade of the Ocean (2021-2030)
  20. Scope and Dimensions of Shipping Industry of Pakistan for Development in Regional and Global Perspective.
  21. Concept of Smart Port and Cargo Management Practices: Recommendations for Pakistan under CPEC Perspective
  22. Prospects of Economic Growth and Social Development through Maritime Education in Pakistan
  23. Smart Shipping, Ports, Transportation and Global Connectivity through BRI and CPEC.
  24. Role of Gwadar Port in Employment Opportunities, Social Development and Poverty Alleviation.
  25. Concept of Blue Economy and Opportunities of Growth and Development in Pakistani Perspective under BRI and CPEC

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26. Sustainable Energy, Mineral Resources and Development of Innovative Industries in Maritime Sector of Pakistan.
  27. Maritime Safety, Security and Regulatory Policies of Pakistan and Implications under CPEC Development.
  28. Measuring Impact of Green Supply Chain Management on Corporate Performance of Manufacturing Industries in Gwadar Special Economic Zone (Predicting Future through Mixed Method Approach).
  29. Forecasting Impact of Green Supply Chain Practices at Gwadar Industrial Zone on Future of Organizational Performances and Businesses.
  30. Gwadar Industrial Zone in 2040: Supply Chain Management Impacting Financial Outlays of Organizations and their Sustainability.
  31. Gwadar Industrial Zone in 2040: Comparative Study of Conventional and Green Supply Chain Practices Impacting Organizational Sustainability.
  32. Supply Chain Management at Transit Points of Gwadar Industrial Zone: Measuring Impact of Technology on Sustainability of Organizations.

### **MS Economics (2 Years)**

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:**

1. Applicant must have 16 years of Economics / Finance / Banking /Accounting / Statistics /relevant education/ equivalent degree with 2.0/4 CGPA or 50% marks
2. Applicant must have clear GAT/GRE or Bahria University admission test. Students with non-business background will take deficiency courses as per HEC rules.
3. HEC`s attestation on the candidate`s local degree (on the back of the original degree.
4. HEC`s equivalency certificate for the candidate`s foreign degree.Road Map MPhil (Management Sciences)

### **Road Map Economics (2 Years)**



| First Semester                      |             |                      |                                            |       |              |
|-------------------------------------|-------------|----------------------|--------------------------------------------|-------|--------------|
| S.No.                               | Course Code | Proposed Course Code | Course Titles                              | Level | Credit Hours |
| 1                                   | MSE 701     | MSE 601              | Advance Micro-Economics                    | Core  | 3            |
| 2                                   | MSE 705     | MSE 505              | Developmental Economics: theory and Policy | Core  | 3            |
| 3                                   | MSE 704     | MSE 504              | Mathematical Methods for Economists        | Core  | 3            |
| 4                                   |             |                      | Elective 1                                 |       | 3            |
| Second Semester & Electives (12 Cr) |             |                      |                                            |       |              |
| S.No.                               | Course Code | Proposed Course Code | Course Titles                              | Level | Credit Hours |
| 1                                   | MSE 702     | MSE 602              | Advance Macro-Economics                    | Core  | 3            |
| 2                                   | MSE 703     | MSE 603              | Applied Econometrics                       | Core  | 3            |
| 3                                   |             |                      | Elective 2                                 |       | 3            |
| 4                                   |             |                      | Elective 3                                 |       | 3            |
| Third Semester (3 Cr)               |             |                      |                                            |       |              |
| S.No.                               | Course Code |                      | Course Titles                              | Level | Credit Hours |
| 1                                   | THS 701     | THS 701              | Thesis Write-up                            |       | 3            |

| Fourth Semester (3 Cr)        |             |         |                 |       |              |
|-------------------------------|-------------|---------|-----------------|-------|--------------|
| S.No.                         | Course Code |         | Course Titles   | Level | Credit Hours |
| 1                             | THS 701     | THS 701 | Thesis Write-up |       | 3            |
| <b>Total Credit Hours: 30</b> |             |         |                 |       |              |
| Core: 15                      |             |         |                 |       |              |
| <b>Dissertation: 6</b>        |             |         |                 |       |              |
| <b>Electives: 9</b>           |             |         |                 |       |              |

| <b>List of Electives</b> |             |                      |                                                                                     |               |              |
|--------------------------|-------------|----------------------|-------------------------------------------------------------------------------------|---------------|--------------|
| S.No.                    | Course Code | Proposed Course Code | Course Titles                                                                       | Concentration | Credit Hours |
| 1                        | MSE 711     | MSE 711              | Seminars in Applied Economics/Applied Policy Analysis for Macroeconomic Development | Economics     | 3            |
| 2                        | MSE 712     | MSE 712              | Financial Economics                                                                 | Finance       | 3            |
| 3                        | MSE 713     | MSE 713              | International Trade                                                                 | Economics     | 3            |
| 4                        | MSE 714     | MSE 714              | Fiscal Policy                                                                       | Finance       | 3            |
| 5                        | MSE 715     | MSE 715              | Monetary Policy                                                                     | Finance       | 3            |

|    |         |         |                                              |           |   |
|----|---------|---------|----------------------------------------------|-----------|---|
| 6  | MSE 716 | MSE 716 | Environmental and Natural Resource Economics | Economics | 3 |
| 7  | MSE 717 | MSE 717 | Public Economics for Public Policy           | Economics | 3 |
| 8  | MSE 718 | MSE 618 | Industrial Economics                         | Economics | 3 |
| 9  | MSE 719 | MSE 619 | Urban Economics                              | Economics | 3 |
| 10 | MSE 720 | MSE 620 | Economic Appraisal and Valuation             | Finance   | 3 |
| 11 | MSE 721 | MSE 521 | Research Methods                             | Economics | 3 |

### **MS Finance (1.5 Years)**

**Campus:** Islamabad & Karachi

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

#### **Eligibility Criteria:**

Students eligible for the MS Finance Program should have 16 years of business/ relevant education, 50% marks in annual exams. 2.0/4.0 CGPA in semester system. Students with 16 years of non-business education will be required to do 30 credit hours of deficiency courses to become eligible for the MS Finance program.

Additionally, applicants must provide HEC verification of all academic certificates/ degrees.



## Road Map Fiance (1.5 Years)

### Semester-1

| Course Code | Course Title                       | CH |
|-------------|------------------------------------|----|
| MSF 700     | Research Methods and Econometrics  | 3  |
| MSF 701     | Financial Calculus and Mathematics | 3  |
| MSF 702     | Financial Modeling and VBA         | 3  |
| MSF XXX     | Elective-I                         | 3  |

### Semester-2

| Course Code | Course Title           | CH |
|-------------|------------------------|----|
| MSF 704     | Financial Econometrics | 3  |
| MSF XXX     | Elective-II            | 3  |
| MSF XXX     | Elective-III           | 3  |
| MSF XXX     | Elective-IV            | 3  |

### Semester-3

| Course Code | Course Title              | CH |
|-------------|---------------------------|----|
| THS 799     | Thesis / Capstone Project | 6  |



## List of Elective Courses

| Course Code | Course Title                              | CH |
|-------------|-------------------------------------------|----|
| MSF 710     | Advance Portfolio Analysis and Management | 3  |
| MSF 711     | Derivatives Investments                   | 3  |
| MSF 712     | Alternative Investments                   | 3  |
| MSF 713     | Fixed Income Investments and Analysis     | 3  |
| MSF 714     | Asset Pricing Theory                      | 3  |
| MSF 715     | Real Estate Investments                   | 3  |
| MSF 716     | Behavioral Finance & Decision Making      | 3  |
| MSF 717     | Advance Topics in Corporate Finance       | 3  |
| MSF 718     | Case Studies in Corporate Finance         | 3  |
| MSF 719     | Mergers and Acquisition Analysis          | 3  |
| MSF 720     | International Finance and Investments     | 3  |
| MSF 721     | Theory of Finance                         | 3  |
| MSF 722     | Financial Restructuring                   | 3  |
| MSF 723     | Asset Valuation                           | 3  |
| MSF 724     | Strategic Financial Management            | 3  |
| MSF 725     | Financial System and Regulations          | 3  |
| MSF 726     | Financial Risk Management and Derivatives | 3  |
| MSF 727     | Insurance and Risk Management             | 3  |
| MSF 728     | Structured Securities                     | 3  |



## MS Marketing & Sales (1.5 Years)

**Campus:** Islamabad

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:**

Applicant must have 16 years of Business or Management education/ equivalent degree with 2.0/4 CGPA or 50% marks. Students with non-business background will take deficiency courses as per HEC rules.

### Semester 1

| Course Code | Course Title                                    | CH |
|-------------|-------------------------------------------------|----|
| MSM 701     | Applied Approaches to Branding & Communication  | 3  |
| MSM 704     | Research Philosophy and Quantitative Techniques | 3  |
| MSM 721     | Advanced Marketing research & Consumer Behavior | 3  |
| MSM XXX     | Elective 1                                      | 3  |

### Semester 2

| Course Code | Course Title                                 | CH |
|-------------|----------------------------------------------|----|
| MSM 722     | Emerging Concepts of Channels & Distribution | 3  |
| MSM XXX     | Elective 2                                   | 3  |
| MSM XXX     | Elective 3                                   | 3  |
| MSM 795     | Independent Market Study                     | 3  |

### Semester 3

| Course Code | Course Title             | CH |
|-------------|--------------------------|----|
| MSM XXX     | Elective 4               | 3  |
| THS 799     | Thesis/ Capstone Project | 6  |

### List of Elective Courses

| Course Code | Course Title                                     | CH |
|-------------|--------------------------------------------------|----|
| MSM 731     | Seminar in Sales Force Management                | 3  |
| MSM 732     | Marketing Analytics and Data Mining              | 3  |
| MSM 733     | Entrepreneurial Marketing                        | 3  |
| MSM 734     | Topics in Strategic Sales Management             | 3  |
| MSM 735     | Philosophy of Customer Relationship Management   | 3  |
| MSM 736     | Perspectives of Retailing & Franchise Management | 3  |
| MSM 737     | Corporate Sales & Key Account Management         | 3  |
| MSM 738     | Marketing Modeling                               | 3  |
| MSM 739     | Discourse of Personal Selling                    | 3  |
| MSM 740     | Digital Marketing                                | 3  |

## MS Management Sciences (1.5 Years)

**Campus:** Islamabad, Lahore & Karachi

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:** 16 Years education, Masters/ Bachelor's Degree with a minimum 50% marks or CGPA 2.0/4.0 in relevant discipline.

- NTS GAT (Gen)/GRE (Gen) passed with minimum 50% marks or BU test (50% minimum passing marks).  
Result are to be submitted at the time of application in case of GAT (Gen)/GRE (Gen) or as prescribed by University.
- HEC's attestation on the candidate's local degrees (on the back of the original degrees).
- HEC's equivalency certificate for the candidate's foreign degrees.

### Road Map MS Management Sciences (1.5 Years)

#### Semester-1

| Course Code | Course Title                                                           | CH |
|-------------|------------------------------------------------------------------------|----|
| MGT 705     | Strategic Management: Contemporary Concepts, Theories and Applications | 3  |
| MGT 702     | Advanced Research Methodology and Proposal Development                 | 3  |
| MGT 706     | Advance Marketing Management: Concept and Applications                 | 3  |
| MGT XXX     | Elective-I                                                             | 3  |

## Semester-2

| Course Code | Course Title                                                       | CH |
|-------------|--------------------------------------------------------------------|----|
| MGT 707     | Strategic Finance: Concepts and Applications of Contemporary Views | 3  |
| MGT XXX     | Elective-II                                                        | 3  |
| MGT XXX     | Elective-III                                                       | 3  |
| MGT XXX     | Elective-IV                                                        | 3  |

## Semester-3

| Course Code | Course Title             | CH |
|-------------|--------------------------|----|
| THS 799     | Thesis/ Capstone Project | 6  |

## List of Elective Courses

| Course Code | Course Title                                                              | CH |
|-------------|---------------------------------------------------------------------------|----|
| MGT 717     | Contemporary Issues in International Marketing: Concepts and Applications | 3  |
| MGT 718     | Corporate Governance and Sustainability                                   | 3  |
| MGT 725     | Globalization                                                             | 3  |
| MGT 721     | HRM: Concepts and Applications                                            | 3  |
| MGT 715     | Change Management: Concepts and Applications                              | 3  |
| MGT 711     | Leadership Issues in Organizations: Concepts & Applications               | 3  |

|         |                                                   |   |
|---------|---------------------------------------------------|---|
| MGT 731 | Organizational Behavior and Management            | 3 |
| MGT 732 | Financial Institution Management                  | 3 |
| MGT 733 | International Business and Economics Perspectives | 3 |
| MGT 729 | Financial Econometrics                            | 3 |

### MS PM (1.5 Years)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

#### Eligibility Criteria:

16 Years education from HEC attestation recognized educational institutes CGPA: 2.0 / 4.00 or 50% marks for non-CGPA degree Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### Road Map MS PM (1.5 Years)

#### Semester 1

| Course Code | Course Title                                      | C. Hrs |
|-------------|---------------------------------------------------|--------|
| MSP 750     | Project Management Principles and Practices       | 3      |
| MSP 702     | Project Cost and Finance Management               | 3      |
| MSP 703     | Project Human Resource and Stakeholder Management | 3      |
| MSP 740     | Research Methodology (Optional)                   | 3      |

## Semester 2

| Course Code | Course Title                              | C. Hrs |
|-------------|-------------------------------------------|--------|
| MSP 704     | Project Planning and Development          | 3      |
| MSP 705     | Project Risk Management                   | 3      |
| MSP 706     | Project Procurement & Contract Management | 3      |
| MSP XXX     | Project- 1                                | 3      |

## Semester 3

| Course Code                     | Course Title                                   | C. Hrs |
|---------------------------------|------------------------------------------------|--------|
| MSP 707                         | Project Quality Management and Lean Operations | 3      |
| MSP 708                         | Project Evaluation and Control Management      | 3      |
| MSP XXX                         | Elective e- 1 (Specialization )                | 3      |
| MSP XXX                         | Project - 2                                    | 3      |
| <b><u>In Case of Thesis</u></b> |                                                |        |
| THS 799                         | Research Thesis                                | 6      |
| MSP 740                         | Research Methodology                           | 0      |

## List of Elective Courses

| Course Code | Course Title                         | C. Hrs |
|-------------|--------------------------------------|--------|
| MSP721      | Disaster Management for Disasters    | 3      |
| MSP 722     | Innovation and Technology Management | 3      |



|         |                                                  |   |
|---------|--------------------------------------------------|---|
| MSP 723 | NGO Management                                   | 3 |
| MSP 724 | Scope and Integration Management                 | 3 |
| MSP 725 | Government Projects (PC1-PC5)                    | 3 |
| MSP 726 | Project Supply Chain Management                  | 3 |
| MSP 727 | Project Review, Assurance and Governance         | 3 |
| MSP 728 | Project Communication and Stakeholder Management | 3 |
| MSP 729 | Project Leadership Management                    | 3 |
| MSP 730 | Quantitative Methods for Decision Making         | 3 |

### List of Projects

| Course Code | Course Title                                                        | C. Hrs |
|-------------|---------------------------------------------------------------------|--------|
| MSP 731     | Primavera CBT                                                       | 3      |
| MSP 732     | EPM Microsoft Project Server (2010) CBT                             | 3      |
| MSP 733     | Share Point Solutions CBT                                           | 3      |
| MSP 734     | Available for CBT Projects                                          | 3      |
| MSP 735     | Project Management Office (PMO) Classroom based                     | 3      |
| MSP 736     | Advance Skills for Project Management Professionals Classroom based | 3      |
| MSP 737     | Advanced Project Management Software Systems                        | 3      |

**\*Note:** In the case of thesis students will be liable to do zero credit research methodology course (pre-reg of thesis) which will be counted in the final transcript.

## MS SCM (1.5 Years)

**Campus:** Islamabad

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:**

16 years' education from HEC attestation recognized educational institutes with business/commerce background CGPA: 2.0 / 4.00 or 50% marks for non-CGPA degree.

Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### Road Map SCM (1.5 Years)

#### Semester-1

| Course Code | Course Title                                                      | CH |
|-------------|-------------------------------------------------------------------|----|
| SCM701      | Fundamentals of Supply Chain Management                           | 3  |
| SCM 734     | Advanced Negotiation, Contracting & Law in Procurement and Supply | 3  |
| SCM 728     | Advanced Supplier Selection & Bid Evaluation                      | 3  |

#### Semester-2

| Course Code | Course Title                                      | CH |
|-------------|---------------------------------------------------|----|
| SCM 729     | Advanced Business Research Methods (Focus on SCM) | 3  |
| SCM707      | Contemporary Issues in Supply Chain               | 3  |
| SCM 730     | Advanced Inventory & Logistics Operations         | 3  |
| SCM706      | Operations Management & Supply Chain              | 3  |



### Semester-3

| Course Code | Course Title                      | CH |
|-------------|-----------------------------------|----|
| SCM708      | Strategic Supply Chain Management | 3  |
| SCM 731     | Advanced Supply Chain Finance     | 3  |
| SCM XXX     | Elective- 1 (Specialization)      | 3  |
| SCM XXX     | Elective- 2 (Specialization)      | 3  |

### List of Elective Courses

| Course Code | Course Title                                                               | CH |
|-------------|----------------------------------------------------------------------------|----|
| SCM721      | Leadership in Procurement and Supply                                       | 3  |
| SCM722      | Managing Risks in Supply Chains                                            | 3  |
| SCM 732     | Advanced Supply Chain Diligence                                            | 3  |
| SCM724      | Category Management in Procurement and Supply                              | 3  |
| SCM725      | Regulatory Framework for Trade Harmonization in International Supply Chain | 3  |
| SCM726      | Mathematical Modeling & Optimization Techniques in Supply Chain            | 3  |
| SCM 733     | Advanced Software & Simulations                                            | 3  |

## MS BUSINESS ANALYTICS

**Campus:** Islamabad

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:** A bachelor's degree (16 Years of Education) in Business Related Education recognized by HEC.

An overall grade point average (GPA) of at least 2.0/4 or 50% percent marks in last degree.

### Road Map of MS Business Analytics

#### Semester 1

| Course Code | Course Title                                  | CH |
|-------------|-----------------------------------------------|----|
| MGT 734     | Business Math's and Statistics                | 3  |
| MGT 735     | Advanced Research Methodology and Application | 3  |
| MGT 736     | Strategic Decision Making                     | 3  |
| MGT 737     | Data Mining                                   | 3  |

#### Semester 2

| Course Code | Course Title                 | CH |
|-------------|------------------------------|----|
| MGT 738     | Tools for Business Analytics | 3  |
| MGT 739     | Programming using Python/R   | 3  |
| MGT XXX     | Elective-I                   | 3  |
| MGT XXX     | Elective-II                  | 3  |



### Semester 3

| Course Code | Course Title             | CH |
|-------------|--------------------------|----|
| THS 799     | Thesis/ Capstone Project | 6  |

### List of Elective Courses

| Course Code | Course Title                                 | CH |
|-------------|----------------------------------------------|----|
| MSF 729     | Fin tech/Data Science for Finance            | 3  |
| MSF 730     | Applied Time Series Analysis for Forecasting | 3  |
| MSF 731     | Risk Management                              | 3  |
| MSF 732     | Financial Modeling                           | 3  |
| MSM 741     | Digital Marketing and social media           | 3  |
| MSM 742     | Retailing and Analytics                      | 3  |
| MSM 743     | Market Strategy and Forecasting              | 3  |
| MSM 744     | Customer Relations Management                | 3  |
| MGT 740     | Decision Support System                      | 3  |
| MGT 741     | Management Models                            | 3  |
| MGT 742     | HR Analytics                                 | 3  |
| MGT 743     | Performance Management                       | 3  |

## MS (HRM & ORGANIZATIONAL PSYCHOLOGY) (2 Years)

**Campus:** Karachi

**Program Duration:** 1.5 Years (3 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:** Management sciences and psychology / sociology background.

- CGPA 2.00 or above in the Fnal degree, on hand, if degree obtained from a CGPA based system.
- Minimum 50% marks if degree obtained from a non-CGPA program.
- Must pass Bahria University Admission Test. And / Or
- GAT General with 50 marks obtained in less than two years prior to admissions.

Additionally, applicant must provide HEC verification of all academic certificates / degrees.

### Road Map of MS - HRM & OP (2 Years)

#### Semester 1

| Course Code | Course Title                                       | CH |
|-------------|----------------------------------------------------|----|
| MHO 701     | Contemporary HRM and Practices                     | 3  |
| MHO 702     | Personnel Selection and Advanced Counseling Skills | 3  |
| MHO 703     | Organizational Psychology and Psychometrics        | 3  |

#### Semester 2

| Course Code | Course Title                                 | CH |
|-------------|----------------------------------------------|----|
| MHO 704     | Applied Attitude and Behavioral Analysis     | 3  |
| MHO 705     | Contemporary Issues in Business and Industry | 3  |
| MHO xxx     | Elective-I                                   | 3  |



### Semester 3

| Course Code | Course Title                                           | CH |
|-------------|--------------------------------------------------------|----|
| MGT 702     | Advanced Research Methodology and Proposal Development | 3  |
| MHO xxx     | Elective-II                                            | 3  |
| MHO xxx     | Elective-III                                           | 3  |

### Semester 4

| Course Code | Course Title    | CH |
|-------------|-----------------|----|
| 5DW         | Internship      | 3  |
| THS 799     | Research Thesis | 6  |

### List of Elective Courses

| Course Code | Course Title                                                  | CH |
|-------------|---------------------------------------------------------------|----|
| MHO 710     | Leadership Issues in Organizations: Concepts and Applications | 3  |
| MHO 712     | Theories of Learning and Conditioning                         | 3  |
| MHO 713     | Communication Strategies of Scholars                          | 3  |
| MHO 715     | Seminars in Organizational Behaviors                          | 3  |
| MHO 716     | Culture and Persuasion                                        | 3  |
| MHO 717     | Social and Self- Development                                  | 3  |
| MHO 718     | Abnormal Psychology                                           | 3  |

|         |                                        |   |
|---------|----------------------------------------|---|
| MHO 719 | Industrial Relations and Labour Laws   | 3 |
| MHO 720 | Seminars in Organizational Development | 3 |
| MHO 721 | Seminars in Human Resource Development | 3 |
| MHO 722 | Conflict Resolution Skills             | 3 |
| MHO 723 | HR Analytics                           | 3 |

### Deficiency Courses

| Course Code | Course Title                                 |
|-------------|----------------------------------------------|
| MGT 662     | Strategic Management                         |
| MKT 653     | Corporate Leadership & Social Responsibility |
| HRM 664     | Job Analysis and Design                      |
| HRM 648     | Organizational Development                   |
| HRM 689     | Recruitment and Selection                    |
| HRM 679     | Performance Management                       |
| HRM 660     | Training And Development                     |
| HRM 670     | HR Planning                                  |

Topics for Research in Maritime Domain for MBA/ MS/MPhil/PhD

1. Shipping Industry of Pakistan: Scope and Dimensions for Development in Global and Regional Perspective
2. Maritime Education and Research: Employment Scope and Development Avenues in Pakistani Perspective under BRI and CPEC
3. Employment and Entrepreneurship Opportunities: Maritime Education and Skill needs of Pakistan in CPEC Scenario of 2025 and Beyond

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4. Management of Warehouses: New Trends under Technology Dominance, Pakistan a Case in Point
  5. Marine Oil Spill: Past, Present and Future Status of Pakistani Coastal Protection and Disaster Management
  6. Port Management under Technology Dominance: Karachi Port Trust and its Significance in
  7. Pakistan's Economy
  8. Port Management under Technology Dominance: The Port Muhammad Bin Qasim and its
  9. Significance in Pakistan's Economy
  10. Effective Cargo Management: Managing Shipping Containers at Pakistani Ports, a Case in Point
  11. State of Maritime Container Terminals in Pakistan: Significance of Automated Systems
  12. Shipping Industry in Pakistan: Current Status and its Future in view of CPEC Scenario of 2025-2030
  13. Issues of Port Safety in Pakistan: Management Risks and Solutions as Per International Standards
  14. Boat Construction Dynamics in Pakistan: Its significance and Future in View of CPEC Scenario of 2025-2030.
  15. Gawadar Fish Harbor: Its Significance, Development Prospects and Future under CPEC Expansions
  16. Maritime Security: Current Status and its Future In view of BRI and CPEC Scenario of 2030.
  17. Pakistan and China Collaborations for Enhancing Growth of Maritime industry in Pakistan.
  18. Entrepreneurship, Innovation and Finance for Sustainable Development and Exploration of Maritime resources.
  19. Challenges Expected to be Faced By Developing Countries After the Decade of the Ocean (2021-2030)
  20. Scope and Dimensions of Shipping Industry of Pakistan for Development in Regional and Global Perspective.
  21. Concept of Smart Port and Cargo Management Practices: Recommendations for Pakistan under CPEC Perspective
  22. Prospects of Economic Growth and Social Development through Maritime



## Education in Pakistan

23. Smart Shipping, Ports, Transportation and Global Connectivity through BRI and CPEC.
24. Role of Gwadar Port in Employment Opportunities, Social Development and Poverty Alleviation.
25. Concept of Blue Economy and Opportunities of Growth and Development in Pakistani Perspective under BRI and CPEC
26. Sustainable Energy, Mineral Resources and Development of Innovative Industries in Maritime Sector of Pakistan.
27. Maritime Safety, Security and Regulatory Policies of Pakistan and Implications under CPEC Development.
28. Measuring Impact of Green Supply Chain Management on Corporate Performance of Manufacturing Industries in Gwadar Special Economic Zone (Predicting Future through Mixed Method Approach).
29. Forecasting Impact of Green Supply Chain Practices at Gwadar Industrial Zone on Future of Organizational Performances and Businesses.
30. Gwadar Industrial Zone in 2040: Supply Chain Management Impacting Financial Outlays of Organizations and their Sustainability.
31. Gwadar Industrial Zone in 2040: Comparative Study of Conventional and Green Supply Chain Practices Impacting Organizational Sustainability.
32. Supply Chain Management at Transit Points of Gwadar Industrial Zone: Measuring Impact of Technology on Sustainability of Organizations.

## PhD Management Sciences (3 Years)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

- MS/MPhil degree or equivalent with eighteen (17.5) years of education in a subject relevant to the held of Study.
- A minimum CGPA of 3.0 out of 4.0 in the semester system or 60% marks in the annual system.
- Following Documents shall accompany the application: A Statement of Purpose



and a Research Proposal in the area of interest for PhD programmes. NTS/GRE/Equivalent Score Card with 60% marks or BU Test (70% passing  
Additionally, applicants must provide HEC verification of all academic certificates /degrees.

### **Road Map PhD Management Sciences (3 Years)**

#### **Semester-1**

| <b>Course Code</b> | <b>Course Title</b>                        | <b>CH</b> |
|--------------------|--------------------------------------------|-----------|
| MGT 802            | Advanced Qualitative Research              | 3         |
| MGT 805            | Contemporary Issues in Management Sciences | 3         |
| MGT 806            | Advanced Quantitative Research Methods     | 3         |

#### **Semester-2**

| <b>Course Code</b> | <b>Course Title</b> | <b>CH</b> |
|--------------------|---------------------|-----------|
| MGT xxx            | Elective I          | 3         |
| MGT xxx            | Elective II         | 3         |
| MGT xxx            | Elective III        | 3         |

#### **Semester-3**

| <b>Course Code</b> | <b>Course Title</b> | <b>CH</b> |
|--------------------|---------------------|-----------|
| THS 899            | PhD Thesis          | 9         |

#### Semester-4

| Course Code | Course Title | CH |
|-------------|--------------|----|
| THS 899     | PhD Thesis   | 9  |

#### Semester-5

| Course Code | Course Title | CH |
|-------------|--------------|----|
| THS 899     | PhD Thesis   | 9  |

#### Semester-6

| Course Code | Course Title | CH |
|-------------|--------------|----|
| THS 899     | PhD Thesis   | 9  |

#### List of Electives Courses

| Course Code | Course Title                                       | CH |
|-------------|----------------------------------------------------|----|
| MGT 830     | Seminars in Organizational Behavior                | 3  |
| MGT 831     | Communication Strategies for Scholars              | 3  |
| MGT 832     | Seminar in Behavioral Decision Making              | 3  |
| MGT 833     | Seminar in International Human Resource Management | 3  |
| MGT 834     | Dissertation Research                              | 3  |
| MGT 835     | Industrial / Organizational Psychology             | 3  |



|         |                                                                            |   |
|---------|----------------------------------------------------------------------------|---|
| MGT 836 | Seminar in economics of Strategy and Organization                          | 3 |
| MGT 837 | Seminar in Leadership and change Management                                | 3 |
| MGT 838 | Advanced International Business Management                                 | 3 |
| MGT 839 | Intelligent Information systems Marketing Courses                          | 3 |
| MGT 840 | Seminar in Entrepreneurial Communication                                   | 3 |
| MGT 841 | Behavior Research in Marketing                                             | 3 |
| MGT 842 | Seminar in Behavioral Research in Marketing II: Consumer Behavior          | 3 |
| MGT 843 | Seminar in Product Planning                                                | 3 |
| MGT 844 | Seminar in qualitative Research in Marketing: Strategic Models and Methods | 3 |
| MGT 845 | Empirical Analysis of Dynamic Decision Context                             | 3 |
| MGT 846 | Culture and Persuasion                                                     | 3 |
| MGT 847 | Seminar in International Marketing                                         | 3 |
| MGT 848 | Advance topic in Marketing                                                 | 3 |
| MGT 849 | Marketing Research and Analysis                                            | 3 |
| MGT 850 | Seminar in International Advertising                                       | 3 |
| MGT 851 | Behavior Research in Marketing                                             | 3 |
| MGT 852 | Production and Operations Management                                       | 3 |
| MGT 828 | Financial Econometrics                                                     | 3 |
| MGT 870 | Behavioral Finance and Decision Making                                     | 3 |

## PhD Economics (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

The eligibility criteria for PhD Economics program is as follows:

- MS/ M-Phil economics degree (17.5/18 years of education) with consistently good academic record and minimum of 60% marks in the annual system or CGPA of 3.0 out of 4.00 in the semester system.
- A minimum of 60% marks in the GAT- subject test conducted by the National Testing Service (NTS) or Candidates must have at least 70% score in university based subject test.
- HEC's attestation on the candidate's local degrees (on the back of the original degrees).
- HEC's equivalency certificate for the candidate's foreign degrees.

### Road Map PhD Economics (3 Years)

#### Semester 1

| Course Code | Course Title                 | CH |
|-------------|------------------------------|----|
| ECO 801     | Applied Microeconomic Theory | 3  |
| ECO 802     | Applied Macroeconomic Theory | 3  |
|             | Elective 1                   | 3  |



## Semester 2

| Course Code | Course Title                 | CH |
|-------------|------------------------------|----|
| ECO 803     | Advanced Econometric Methods | 3  |
|             | Elective II                  | 3  |
|             | Elective III                 | 3  |

## Semester 3

| Course Code | Course Title | CH |
|-------------|--------------|----|
| THS 899     | PhD Thesis   | 9  |

## Semester 4

| Course Code | Course Title | CH |
|-------------|--------------|----|
| THS 899     | PhD Thesis   | 9  |

## Semester 5

| Course Code | Course Title | CH |
|-------------|--------------|----|
| THS 899     | PhD Thesis   | 9  |

## List of Electives Courses

| Course Code | Course Title                        | CH |
|-------------|-------------------------------------|----|
| ECO 811     | Agricultural Development and Policy | 3  |
| ECO 812     | Development Economics               | 3  |
| ECO 813     | Economic Growth and Distribution    | 3  |
| ECO 814     | Economics of Population             | 3  |
| ECO 815     | Environmental Economics             | 3  |
| ECO 816     | International Economics             | 3  |
| ECO 817     | Mathematic al Economics             | 3  |
| ECO 818     | Monetary Economics                  | 3  |
| ECO 819     | Topics in Advanced Econometrics     | 3  |

## ADP Business Administration

**Program:** Associate Degree Programme in Business Administration

**Department:** Management Sciences

**Duration:** 2 Years, 4 Semesters

**Campus:** Lahore

**Eligibility Criteria:** Intermediate or its equivalent with a minimum of 50% marks (excluding NCC) in any discipline.



### Semester 1:

| S. No. | Course Code | Course Title                 | Credit Hours |
|--------|-------------|------------------------------|--------------|
| 1      | ENG 105     | Functional English           | 3            |
| 2      | MKT 110     | Principles of Marketing      | 3            |
| 3      | QTM 101     | Business Mathematics I       | 3            |
| 4      | ECO 110     | Microeconomics               | 3            |
| 5      | MGT 111     | Principles of Management     | 3            |
| 6      | MIS 161     | IT in Business (word, excel) | 3            |
| Total  |             |                              | 18           |

### Semester 2:

| S. No. | Course Code | Course Title                              | Credit Hours |
|--------|-------------|-------------------------------------------|--------------|
| 1      | ENG 120     | English Writing Skills                    | 3            |
| 2      | QTM 120     | Business Mathematics II / Numeracy Skills | 3            |
| 3      | HSS 202     | Introduction to Sociology                 | 3            |
| 4      | ECO 121     | Macroeconomics                            | 3            |
| 5      | QTM 110     | Business Statistics                       | 3            |
| 6      | ACC 101     | Principles of Accounting                  | 3            |
| Total  |             |                                           | 18           |

### Semester 3:

| S. No. | Course Code       | Course Title                                    | Credit Hours |
|--------|-------------------|-------------------------------------------------|--------------|
| 1      | ENG 132           | Oral Communication (Public Speaking)            | 3            |
| 2      | QTM 205           | Statistical Inference and Quantitative Research | 3            |
| 3      | ACC 102           | Financial Accounting                            | 3            |
| 4      | ISL 201 / SOC 360 | Islamic Socio-Economic Studies / Ethics         | 3            |
| 5      | MKT 231           | Marketing Management                            | 3            |
| 6      | MGT 242           | Organizational Theory and Behavior              | 3            |
| Total  |                   |                                                 | 18           |

### Semester 4:

| S. No. | Course Code | Course Title            | Credit Hours |
|--------|-------------|-------------------------|--------------|
| 1      | MGT 211     | Self-Management         | 3            |
| 2      | ACC 203     | Cost Accounting         | 3            |
| 3      | BCM 204     | Business Communication  | 3            |
| 4      | FIN 201     | Fundamentals of Finance | 3            |
| 5      | LAW 319     | Business Law            | 3            |
| 6      | SOC 350     | Business Ethics         | 3            |
| 7      | SDW 496     | Internship (3+3 weeks)  | 0            |
|        |             | *20 CSP Hours           |              |
| Total  |             |                         | 18           |

\*Every student enrolled in ADP program, is required to serve the community for 20 hours.



## DEPARTMENT OF MARITIME SCIENCES

### **Programs offered:**

- BS Maritime & Buiness Management (2 Years)
- BS Maritime & Buiness Management (4 Years)
- MS Maritime Ports & Shipping Management (2 Years)
- BS Coastal and Marine Sciences (4 Years)

### **BS Maritime & Buiness Management (2 Years)**

**Campus:** Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Morning

### **Eligibility Criteria:**

14 Years qualification in the form of an Associate Degree in Nautical Sciences/Ship Management, BSc in Maritime Studies or related fields. With 2 CGPA or 50 % marks.

## Road Map BS Maritime & Buiness Management (2 Years)

### Semester-1

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title                          | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|---------------------------------------|--------------|--------|-----------|
| 1                                       |                           | MTM 101     | Introduction to Maritime Industry     | 3            | Yes    | –         |
| 2                                       |                           | ECO 101     | Fundamentals of Economics             | 3            | Yes    | –         |
| 3                                       |                           | ENG 105     | Functional English                    | 3            | Yes    | –         |
| 4                                       |                           | Fin 201     | Fundamental of Accounting and Finance | 3            | Yes    | –         |
| 5                                       |                           | MKT 110     | Principle of Marketing                | 3            | Yes    | –         |
| 6                                       |                           | MTM 322     | Fisheries Resources & Management      | 3            | Yes    | –         |
| <b>Total Credit Hours in Semester-1</b> |                           |             |                                       | <b>18</b>    |        |           |

### Semester-2

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title                            | Credit hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|-----------------------------------------|--------------|--------|-----------|
| 1                                       |                           | MTM 222     | Introduction to Coastal Zone Management | 3            | Yes    | –         |
| 2                                       |                           | HRM 353     | Human Resource Management               | 3            | Yes    | –         |
| 3                                       |                           | MAT 205     | Statistics                              | 3            | Yes    | –         |
| 4                                       |                           | MTM 305     | Maritime Logistics                      | 3            | Yes    | –         |
| 5                                       |                           | MTM 304     | Port Operations and Management          | 3            | Yes    | –         |
| 6                                       |                           | MIS 460     | E-Commerce                              | 3            | Yes    | –         |
| <b>Total Credit Hours in Semester-2</b> |                           |             |                                         | <b>18</b>    |        |           |

**Semester-3**

| Sr.No. | Pre-requisite course code | Course Code | Course Title                                   | Credit Hours | Theory | Practical |
|--------|---------------------------|-------------|------------------------------------------------|--------------|--------|-----------|
| 1      |                           | MTM 401     | Coastal Eco-Tourism Development and Management | 3            | Yes    | –         |
| 2      |                           | MTM 306     | Shipping Operations and Management             | 3            | Yes    |           |
| 3      |                           | MRM 302     | Research & Project Writing Methods             | 3            | Yes    | –         |
| 4      |                           | MTM 224     | Marine Pollution & Control                     | 3            | Yes    |           |

**Semester-4**

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title                           | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|----------------------------------------|--------------|--------|-----------|
| 1                                       | MRM 302                   | SDW 499     | Project / Thesis                       | 6            | Yes    | –         |
| 2                                       | MTM 322                   | MTM 403     | Maritime Innovation & Entrepreneurship | 3            | Yes    |           |
| 3                                       |                           |             | Elective 3                             | 3            | Yes    | –         |
| 4                                       |                           |             | Elective 4                             | 3            | Yes    | –         |
| <b>Total Credit Hours in Semester-4</b> |                           |             |                                        | <b>15</b>    |        |           |

**Summer Semester**

| Sr.No.                                | Pre-requisite course code | Course Code | Course Title                                                       | Credit Hours | Theory | Practical |
|---------------------------------------|---------------------------|-------------|--------------------------------------------------------------------|--------------|--------|-----------|
| 1                                     |                           | MTM 223     | Marine Insurance                                                   | 3            | Yes    |           |
| 2                                     | MTM 101                   | GEO 115     | Introduction to Geophysics                                         | 3            | Yes    |           |
| 3                                     |                           | MTM 230     | Introduction to Maritime Law and International Maritime Convention | 3            | Yes    | –         |
| <b>Total Credit Hours in Semester</b> |                           |             |                                                                    | <b>9</b>     |        |           |

## POOL OF ELECTIVES

| Sr.No. | Pre-requisite course code | Course Code | Course Title                            | Credit Hours | Theory | Practical |
|--------|---------------------------|-------------|-----------------------------------------|--------------|--------|-----------|
| 1      |                           | MTM 601     | Conservation Ecology                    | 3            | Yes    | –         |
| 2      |                           | MTM 602     | Planktology                             | 3            | Yes    | –         |
| 3      |                           | MTM 603     | Natural Hazards and Management          | 3            | Yes    | –         |
| 4      |                           | MTM 604     | Coastal and Marine Sedimentology        | 3            | Yes    | –         |
| 5      |                           | MTM 605     | Sea Level changes and Coastal Zones     | 3            | Yes    | –         |
| 6      |                           | MTM 606     | Coastal Tourism Management              | 3            | Yes    | –         |
| 7      |                           | MTM 607     | Coastal Land Reclamation                | 3            | Yes    | –         |
| 8      |                           | MTM 608     | Mangrove Coastal Forest Management      | 3            | Yes    | –         |
| 9      |                           |             | Sea level Changes and Coastal Zones     | 3            | Yes    | –         |
| 10     |                           | MTM 610     | Ocean Waves, Tides & Currents           | 3            | Yes    | –         |
| 11     |                           | MTM 611     | Maritime Safety & Security              | 3            | Yes    | –         |
| 12     |                           | MTM 612     | Ship Brokerage, Chartering & E-Commerce | 3            | Yes    | –         |

## BS Maritime & Business Management (4 Years)

**Campus:** Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

HSSC / Equivalent with 45% Marks

## ROADMAP

### Semester-1

| S.NO | Codes   | Course                            | Level | CH | Pre-requisite |
|------|---------|-----------------------------------|-------|----|---------------|
| 1    | ENG 105 | Functional English                | Core  | 3  |               |
| 2    | MAT 105 | Mathematics                       | Core  | 3  |               |
| 3    | ITC 101 | IT Skills                         | Core  | 3  |               |
| 4    | ECO 101 | Fundamentals of Economics         | Core  | 3  |               |
| 5    | MTM 101 | Introduction to Maritime Industry | Core  | 3  |               |
| 6    | MGT 211 | Self-Management                   | Core  | 3  |               |

### Semester-2

| S.NO | Codes           | Course                                     | Level | CH | Pre- requisite |
|------|-----------------|--------------------------------------------|-------|----|----------------|
| 1    | MGT 111         | Principles of Management                   | Core  | 3  |                |
| 2    | BCM 121         | Business Communication Skills              | Core  | 3  |                |
| 3    | ISI 101/SOC 361 | Islamic Studies/Ethics                     | Core  | 3  |                |
| 4    | GEO 115         | Introduction to Geophysics                 | Core  | 3  | MTM 101        |
| 5    | MTM 120         | Introduction to Meteorology & Oceanography | Core  | 3  |                |
| 6    | HSS 202         | Introduction to Sociology                  | Core  | 3  |                |

### Semester-3

| S.NO | Codes   | Course                                                           | Level | CH | Pre- requisite |
|------|---------|------------------------------------------------------------------|-------|----|----------------|
| 1    | MTM 230 | Introduction to Maritime Law & International Maritime Convention | Core  | 3  |                |
| 2    | ENG 132 | Oral Communication & Public Speaking Skills                      | Core  | 3  |                |
| 3    | PAK 101 | Pakistan Studies                                                 | Core  | 3  |                |
| 4    | FIN 205 | Fundamentals of Accounting & Finance                             | Core  | 3  |                |

|   |         |                                                  |      |   |         |
|---|---------|--------------------------------------------------|------|---|---------|
| 5 | MTM 202 | Economics of Sea Transport & International Trade | Core | 3 | ECO 101 |
| 6 | MGT 221 | Management and Leadership                        | Core | 3 |         |

#### Semester-4

| S.NO | Codes   | Course                                         | Level | CH | Pre- requisite |
|------|---------|------------------------------------------------|-------|----|----------------|
| 1    | MTM 222 | Introduction to Coastal Zone Management        | Core  | 3  |                |
| 2    | MTM 223 | Marine Insurance                               | Core  | 3  |                |
| 3    | MTM 224 | Marine Pollution & Control                     | Core  | 3  |                |
| 4    | MTM 226 | Regulatory Framework of Maritime Organizations | Core  | 3  |                |
| 5    | MAT 205 | Statistics                                     | Core  | 3  |                |
| 6    | HSS 225 | Psychological & Emotional Development          | Core  | 3  |                |

#### Semester-5

| S.NO | Codes   | Course                          | Level | CH | Pre- requisite |
|------|---------|---------------------------------|-------|----|----------------|
| 1    | MTM 304 | Ports Operations & Management   | Core  | 3  |                |
| 2    | MTM 305 | Maritime Logistics              | Core  | 3  |                |
|      |         | Chain Management                |       |    |                |
| 3    | MTM 303 | Law of Carriage of Goods by Sea | Core  | 3  | MTM 226        |
| 4    | MKT 110 | Principles of Marketing         | Core  | 3  | MGT 221        |
| 5    | HRM 353 | Human Resource Management       | Core  | 3  |                |
| 6    | MIS 460 | E-Commerce                      | Core  | 3  |                |

#### Semester-6

| S.NO | Codes   | Course                             | Level | CH | Pre- requisite |
|------|---------|------------------------------------|-------|----|----------------|
| 1    | MTM 306 | Shipping Operations & Management   | Core  | 3  | MMT 301        |
| 2    | MTM 322 | Fisheries Resources & Management   | Core  | 3  |                |
| 3    | MRM 302 | Research & Project Writing Methods | Core  | 3  |                |
| 4    |         | Elective-I                         | Core  | 3  |                |

|   |  |              |      |   |  |
|---|--|--------------|------|---|--|
| 5 |  | Elective-II  | Core | 3 |  |
| 6 |  | Elective-III | Core | 3 |  |

### Semester-7

| S/NO | Codes   | Course                                                           | Level    | CH | Pre-requisite |
|------|---------|------------------------------------------------------------------|----------|----|---------------|
| 1    | MTM 401 | Coastal Eco-Tourism Development and Management                   | Core     | 3  |               |
| 2    | MTM 402 | Hydrographic Data & Services Management/Hydrography & Navigation | Core     | 3  |               |
| 3    | MTM 403 | Maritime Innovation & Entrepreneurship                           | Core     | 3  | MTM 322       |
| 4    |         | Elective-IV                                                      | Elective | 3  |               |
| 5    |         | Elective-V                                                       | Elective | 3  |               |

### Semester-8

| S.NO | Codes   | Course           | Level    | CH | Pre-requisite |
|------|---------|------------------|----------|----|---------------|
| 1    | SDW 499 | Project / Thesis | Core     | 6  | MRM 302       |
| 2    |         | Elective-VI      | Elective | 3  |               |
| 3    |         | Elective-VII     | Elective | 3  |               |

### List of Electives

| S/No. | Course Code | Title of the Course                                       | Credit Hours |
|-------|-------------|-----------------------------------------------------------|--------------|
| 1.    | MTM 225     | Maritime Business: China Pakistan Perspective Under CPEC  | 3            |
| 2.    | MTM 521     | Maritime Business & HRM                                   | 3            |
| 3.    | MTM 522     | Design Port Management                                    | 3            |
| 4.    | MTM 528     | Maritime Management: Concept and Applications             | 3            |
| 5.    | MTM 529     | Contemporary Issues of Maritime Management                | 3            |
| 6.    | MTM 530     | Maritime Management in Pakistan: Past, Present and Future | 3            |
| 7.    | ECO 521     | Marine Techonology                                        | 3            |
| 8.    | ECO 515     | Union and Labor Laws                                      | 3            |
| 9.    | ECO 502     | Industrial Economics                                      | 3            |
| 10.   | MTM 532     | Occupational Health & Safety, Risk & Disaster Managemant  | 3            |

|     |         |                                      |   |
|-----|---------|--------------------------------------|---|
| 11. | HRM 508 | Marine Environments & Administration | 3 |
| 12. | MTM 523 | Ship Chartering                      | 3 |
| 13. | MTM 524 | Custom Documentation                 | 3 |

## BS (COASTAL AND MARINE SCIENCES)

**Campus:** Karachi

**Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:** Intermediate or A-level with the minimum of 50% marks.

### Road Map

#### Semester 1

| Sr. # | Pre-Req | Course Code | Course Title             | Credit Hours |     |
|-------|---------|-------------|--------------------------|--------------|-----|
|       |         |             |                          | Theory       | Lab |
| 1     |         | ENG 105     | Functional English       | 3            | –   |
| 2     |         | ITC 101     | IT Skills                | 3            |     |
| 3     |         | ECO 101     | Fundamental of Economics | 3            |     |
| 4     |         | CHM 105     | Chemistry                | 2            | 1   |
| 5     |         | PHY 101     | Physics                  | 3            |     |
| 6     |         | PAK 101     | Pakistan Studies         | 3            |     |

## Semester 2

| Sr. # | Pre-Req | Course Code | Course Title                                                          | Credit Hours |     |
|-------|---------|-------------|-----------------------------------------------------------------------|--------------|-----|
|       |         |             |                                                                       | Theory       | Lab |
| 1     |         | ISL 101     | Islamic Studies/<br>Ethics                                            | 3            | –   |
| 2     |         | MTM 508     | Occupational Health<br>and Safety, Risk and<br>Disaster<br>Management | 3            | –   |
| 3     |         | CMS 201     | Marine Ecology and<br>Ecosystems                                      | 2            | 1   |
| 4     |         | HSS 202     | Introduction to<br>Sociology                                          | 3            |     |
| 5     | ENG 105 | ENG 132     | Oral Communication                                                    | 3            |     |
| 6     |         | MAT105      | Mathematics                                                           | 3            | –   |

## Semester 3

| Sr. # | Pre-Req | Course Code | Course Title                                     | Credit Hours |     |
|-------|---------|-------------|--------------------------------------------------|--------------|-----|
|       |         |             |                                                  | Theory       | Lab |
| 1     |         | CMS 301     | Introduction to<br>Marine Science                | 3            | –   |
| 2     |         | MTM 120     | Introduction to<br>Meteorology &<br>Oceanography | 3            |     |

|   |         |         |                      |   |   |
|---|---------|---------|----------------------|---|---|
| 3 |         | CMS 304 | Coastal Engineering  | 3 |   |
| 4 | CMS 301 | CMS 302 | Marine Resources     | 3 |   |
| 5 |         | CMS 303 | Marine Biotechnology | 2 | 1 |
| 6 |         | MAT 205 | Statistics           | 3 |   |

#### Semester 4

| Sr. # | Pre-Req | Course Code | Course Title                                   | Credit Hours |     |
|-------|---------|-------------|------------------------------------------------|--------------|-----|
|       |         |             |                                                | Theory       | Lab |
| 1     | CMS 304 | MTM 222     | Introduction to Coastal Zone Management        | 3            | –   |
| 2     |         | MTM224      | Marine Pollution and Control                   | 3            | –   |
| 3     |         | GEO 105     | Physical & General Geology                     | 2            | 1   |
| 4     |         | CMS 401     | Socio-Ecological Fundamentals of Coastal Zones | 3            | –   |
| 5     |         | CMS 507     | Coastal Processes                              | 3            | –   |
| 6     |         | ENV 236     | Introduction to Climate Change                 | 3            |     |

## Semester 5

| Sr. # | Pre-Req | Course Code | Course Title                          | Credit Hours |     |
|-------|---------|-------------|---------------------------------------|--------------|-----|
|       |         |             |                                       | Theory       | Lab |
| 1     |         | GEO 437     | GIS & Remote Sensing                  | 2            | 1   |
| 2     |         | CMS 501     | Oceanographic Instruments and Methods | 3            |     |
| 3     |         | CMS 505     | Marine Biodiversity                   | 3            |     |
| 4     |         | CMS 502     | Marine Acoustics                      | 3            |     |
| 5     | MAT 205 | BSS 307     | Biostatistics                         | 3            |     |
| 6     | GEO 105 | GEO 320     | Marine Geology                        | 3            |     |

## Semester 6

| Sr. # | Pre-Req | Course Code | Course Title                                                     | Credit Hours |     |
|-------|---------|-------------|------------------------------------------------------------------|--------------|-----|
|       |         |             |                                                                  | Theory       | Lab |
| 1     | ENV 36  | CMS 602     | Coastal ecosystem and Climate Change                             | 3            |     |
| 2     |         | MTM 402     | Hydrographic Data & Services Management/Hydrography & Navigation | 3            | –   |

|   |         |         |                                   |   |   |
|---|---------|---------|-----------------------------------|---|---|
| 3 |         | GEO 414 | Physical Oceanography & Surveying | 3 | – |
| 4 | MTM 20  | MOD 606 | Ocean Dynamics                    | 3 |   |
| 5 | CHM 105 | CMS 604 | Marine Geochemistry               | 2 | 1 |
| 6 |         | MRM 302 | Research Project Writing Method   | 3 | – |

### Semester 7

| Sr. # | Pre-Req | Course Code | Course Title                                  | Credit Hours |     |
|-------|---------|-------------|-----------------------------------------------|--------------|-----|
|       |         |             |                                               | Theory       | Lab |
| 1     |         | CMS 701     | Environmental Impact Assessment               | 3            | –   |
| 2     |         | CMS 702     | Marine Geophysics                             | 3            |     |
| 3     |         | MTM 401     | Coastal Ecotourism Development and Management | 3            | –   |
| 4     |         | –           | ELECTIVE I                                    | 3            |     |
| 5     |         | –           | ELECTIVE II                                   | 3            |     |

## Semester 8

| Sr. # | Pre-Req | Course Code | Course Title                        | Credit Hours |     |
|-------|---------|-------------|-------------------------------------|--------------|-----|
|       |         |             |                                     | Theory       | Lab |
| 1     |         | –           | ELECTIVE III                        | 3            |     |
| 2     |         | MTM 605     | Sea Level Changes and Coastal Zones | 3            | –   |
| 3     | MRM 302 | SDW 499     | Project/ Thesis                     | 6            |     |
| Total |         |             |                                     | 12           |     |

## Electives

| Sr. # | Pre-Req | Course Code | Course Title                                   | Credit Hours |     |
|-------|---------|-------------|------------------------------------------------|--------------|-----|
|       |         |             |                                                | Theory       | Lab |
| 1     |         | MTM 603     | Natural Hazards and Management                 | 3            | –   |
| 2     |         | MTM 604     | Coastal and Marine Sedimentology               | 3            | –   |
| 3     |         | CMS 608     | Coastal Resilience and Disaster Risk Reduction | 3            | –   |
| 4     |         | MTM 322     | Fisheries Resources & Management               | 3            |     |
| 5     |         | MTM 607     | Coastal Land Reclamation                       | 3            | –   |



|    |  |         |                                    |   |   |
|----|--|---------|------------------------------------|---|---|
| 6  |  | MTM 608 | Mangrove Coastal Forest Management | 3 | – |
| 7  |  | CMS 613 | Marine Protected Areas Management  | 3 | – |
| 8  |  | MTM 610 | Ocean Waves, Tides, and Currents   | 3 | – |
| 9  |  | CMS 402 | Marine Microbiology                | 2 | 1 |
| 10 |  | CMS 508 | Satellite Oceanography             | 3 |   |



## MS Maritime Ports & Shipping Management (2 Years)

**Campus:** Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:**

16 years of education with Masters/Bachelors or equivalent degree from an HEC recognized university in the relevant discipline/field of study with a minimum CGPA 2.0/4.0 or 50% marks where CGPA is not given. GAT (Gen)/GRE (General) passed with minimum 50% marks or BU test (50% minimum passing marks). Result are to be submitted at the time of application in case of GAT (General) or GRE (General) or as prescribed by the University.

### ROADMAP

#### Semester-1

| Course Code | Course Title                                       | Credit Hours |
|-------------|----------------------------------------------------|--------------|
| MTM 704     | Maritime Economics & Finance                       | 3            |
| MTM 711     | Logistics at Ports and Supply Chain Management     | 3            |
| MTM 703     | Maritime Law and International Maritime Convention | 3            |

#### Semester-2

| Course Code | Course Title                                      | Credit Hours |
|-------------|---------------------------------------------------|--------------|
| MTM 705     | Coastal Zone Management & Contemporary Issues     | 3            |
| MTM 773     | Maritime Technologies and commercial applications | 3            |
| RMT 705     | Research Methodology & Proposal Development       | 3            |

### Semester-3

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
| MTM 754     | Intermodal Transportation | 3            |
|             | Elective I                | 3            |

### Semester 4 (Option I - With Thesis)

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
| THS 799     | Thesis       | 6            |

### Semester 4 (Option II - With Coursework/ in place of a thesis)

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
|             | Elective     | 3            |
|             | Elective     | 3            |

### Deficiency Courses for Inter-disciplinary Qualification Holders

| Course Code | Course Title                                | Credit Hours |
|-------------|---------------------------------------------|--------------|
| MTM 707     | Maritime Safety and Security                | 3            |
| MTM 708     | Ship Brokerage, Chartering and E - Commerce | 3            |



## List of Elective Courses

| Course Code | Course Title                                                                   | Credit Hours |
|-------------|--------------------------------------------------------------------------------|--------------|
| MTM 750     | Maritime Trade and Industrial Economics                                        | 3            |
| MTM 754     | Intermodal Transportation                                                      | 3            |
| MTM 701     | Maritime Industry: Pakistan and China in Global Perspective                    | 3            |
| MTM 713     | Maritime Logistics and Shipping                                                | 3            |
| MTM 758     | Ocean Governance Policy and Maritime Law                                       | 3            |
| MTM 733     | Ports and Logistics Management                                                 | 3            |
| MTM 776     | Ship Security: Threats, Financial and Commercial Implications                  | 3            |
| MTM 771     | Globalization and Maritime Trade: Contemporary Issues and Resolving Strategies | 3            |
| MTM 714     | Dynamics of Maritime Domains                                                   | 3            |

## MS Maritime Trade and Logistics (2 Years)

**Campus:** Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Weekend

**Eligibility Criteria:** 16 years of education with Masters/Bachelors or equivalent degree from an HEC recognized university in the relevant discipline/field of study with a minimum CGPA 2.0/4.0 or 50% marks where CGPA is not given. GAT (Gen)/GRE (General) passed with minimum 50% marks or BU test (50% minimum passing marks). Result are to be submitted at the time of application in case of GAT (General) or GRE (General) or as prescribed by the University.

### Semester-wise Road map

#### Semester-1

| Course Code | Course Title                                       | Credit Hours |
|-------------|----------------------------------------------------|--------------|
| MTM 704     | Maritime Economics & Finance                       | 3            |
| MTM 711     | Logistics at Ports and Supply Chain Management     | 3            |
| MTM 703     | Maritime Law and International Maritime Convention | 3            |

#### Semester-2

| Course Code | Course Title                                      | Credit Hours |
|-------------|---------------------------------------------------|--------------|
| MTM 705     | Coastal Zone Management & Contemporary Issues     | 3            |
| MTM 773     | Maritime Technologies and commercial applications | 3            |
| RMT 705     | Research Methodology & Proposal Development       | 3            |



### Semester-3

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
| MTM 754     | Intermodal Transportation | 3            |

### Semester 4 (Option I - With Thesis)

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
| THS 799     | Thesis       | 6            |

### Semester 4 (Option II - With Coursework/ in place of a thesis)

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
|             | Elective     | 3            |
|             | Elective     | 3            |

### Deficiency Courses for Inter-disciplinary Qualification Holders

| Course Code | Course Title                              | Credit Hours |
|-------------|-------------------------------------------|--------------|
| MTM 707     | Maritime Safety and Security              | 3            |
| MTM 708     | Ship Brokerage, Chartering and E-Commerce | 3            |



## List of Elective Courses

| Course Code | Course Title                                                   | Credit Hours |
|-------------|----------------------------------------------------------------|--------------|
| MTM 778     | Custom clearing and Freight Forwarding                         | 3            |
| MTM 750     | Maritime Trade and Industrial Economics                        | 3            |
| MTM 702     | Ports and Shipping Management in Contemporary Environments     | 3            |
| MTM 719     | Maritime Trade & Logistics: Emerging Global Realities & issues | 3            |
| MTM 714     | Dynamics of Maritime Domain                                    | 3            |
| MTM 701     | Maritime Industry: Pakistan and China in Global Perspective    | 3            |



# Bahria Humanities & Social Sciences School

## Humanities & Social Sciences

### Programs offered:

- BS Public Health (4 Years)
- Bachelor of Social Sciences (4 Years)
- BS English
- BS (Mathematics)
- MS (Applied Anthropology)
- MS (IR)
- MS Government & Public Policy
- PhD (International Relations)

### BS Public Health (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

FA/FSc or Equivalent 50% passing marks

## Roadmap of BS(PH)

### SEMESTER-1

| S# | Course Code | Title                                  | Credit Hours |
|----|-------------|----------------------------------------|--------------|
| 1  | ENG 103     | English 1                              | 3            |
| 2  | PAK 101     | Pakistan Studies                       | 2            |
| 3  | MAT 105     | Mathematics                            | 3            |
| 4  | LSB 110     | Life Sciences Biology                  | 3            |
| 5  | SHD 111     | Sociology of Health and Disease (list) | 3            |
| 6  | BCM 109     | Basic Computer Skills                  | 3            |

### SEMESTER-2

| S# | Course Code | Title                    | Credit Hours |
|----|-------------|--------------------------|--------------|
| 1  | ENG 104     | English 2                | 3            |
| 2  | ISL 101     | Ethics/Islamic Studies   | 2            |
| 3  | BST 108     | Basic Statistics         | 3            |
| 4  | PPS 112     | Principles of Psychology | 3            |
| 5  | MAP 113     | Medical Anthropology     | 3            |
| 6  | PHY 118     | Personal Hygiene         | 3            |

### SEMESTER-3

| S# | Course Code | Title                         | Credit Hours |
|----|-------------|-------------------------------|--------------|
| 1  | ENG 201     | English 3                     | 3            |
| 2  | ICT 217     | Basic Computer Literacy       | 3            |
| 3  | POD 214     | Population Dynamics           | 3            |
| 4  | PHC 215     | Primary Health Care           | 3            |
| 5  | CHD 219     | Concept of Health and Disease | 3            |



## SEMESTER-4

| S# | Course Code | Title                                            | Credit Hours |
|----|-------------|--------------------------------------------------|--------------|
| 1  | ENG 204     | English 4 (any other subject may be offered)     | 3            |
| 2  | PET 216     | Professional Ethics                              | 3            |
| 3  | BEP 220     | Basic Epidemiology                               | 3            |
| 4  | BBI 221     | Basic Biostatistics                              | 3            |
| 5  | PAS 222     | Health Promotion, Advocacy & Social Mobilization | 3            |

## SEMESTER-5

| S# | Course Code | Title                                        | Credit Hours |
|----|-------------|----------------------------------------------|--------------|
| 1  | CNT 323     | Community Nutrition                          | 3            |
| 2  | CPD 324     | Community Pediatrics                         | 3            |
| 3  | FIN 328     | Fundamental Principles of Infectious Disease | 3            |
| 4  | CDE 329     | Epidemiology of Infectious Diseases          | 3            |
| 5  | NCE 330     | Non Communicable Disease Epidemiology        | 3            |

## SEMESTER-6

| S# | Course Code | Title                            | Credit Hours |
|----|-------------|----------------------------------|--------------|
| 1  | RPH 325     | Reproductive Health              | 3            |
| 2  | EOH 326     | Environment& Occupational Health | 3            |
| 3  | HPM 331     | Health Policy and Management     | 3            |
| 4  | HLP 332     | Health Planning                  | 3            |
| 5  | DHM 333     | District Health Management       | 3            |

|          |         |                               |   |
|----------|---------|-------------------------------|---|
| <b>6</b> | HPE 334 | Health Professional Education | 3 |
|----------|---------|-------------------------------|---|

### **SEMESTER-7**

| <b>S#</b> | <b>Course Code</b> | <b>Title</b>         | <b>Credit Hours</b> |
|-----------|--------------------|----------------------|---------------------|
| <b>1</b>  | MHL 427            | Mental Health        | 3                   |
| <b>2</b>  | HMT 442            | Health Marketing     | 3                   |
| <b>3</b>  | REM 435            | Research Methodology | 3                   |
| <b>4</b>  |                    | Elective 1           | 3                   |
| <b>5</b>  |                    | Elective 2           | 3                   |
| <b>6</b>  | RSP 441            | Research Project     | 3                   |

### **SEMESTER-8**

| <b>S#</b> | <b>Course Code</b> | <b>Title</b>     | <b>Credit Hours</b> |
|-----------|--------------------|------------------|---------------------|
| <b>1</b>  | MIB 436            | Microbiology     | 3                   |
| <b>2</b>  | ETL 437            | Entomology       | 3                   |
| <b>3</b>  | PAR 438            | Parasitology     | 3                   |
| <b>4</b>  |                    | Elective 3       | 3                   |
| <b>5</b>  |                    | Elective 4       | 3                   |
| <b>6</b>  | RSI 442            | Research Project | 3                   |



## Bachelor of Social Sciences (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:** FA/FSc or Equivalent 50% passing marks

| Major Requirements                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Foundation Courses</b><br>International Relations = 24 Credit Hours<br>Development Studies= 24 Credit Hours<br>Anthropology= 27 Credit Hours<br>Sociology = 24 Credit Hours                                |
| <b>Elective Courses</b><br>International Relations = 42 Credit Hours<br>Development Studies= 42 Credit Hours<br>Anthropology= 24 Credit Hours<br>Sociology = 24 Credit Hours                                  |
| <b>Specialization/Major Courses</b><br>International Relations = 12 Credit Hours<br>Development Studies= 12 Credit Hours<br>Anthropology= 27 Credit Hours<br>Sociology = 24 Credit Hours                      |
| <b>Research &amp; Thesis/ Paper Writing</b><br>International Relations = 06 Credit Hours<br>Development Studies= 06 Credit Hours<br>Anthropology= 06 Credit Hours (Compulsory)<br>Sociology = 24 Credit Hours |
| <b>Internship</b><br>International Relations= 2 Credit Hours<br>Development Studies= 2 Credit Hours<br>Sociology = 24 Credit Hours                                                                            |

### a. English & Communication Skills Courses

| Course Code | Course Title       |
|-------------|--------------------|
| ENG 103     | English I          |
| ENG 104     | English II         |
| ENG 105     | Oral Communication |

### b. Pakistan & Islamic Studies

| Course Code | Course Title     |
|-------------|------------------|
| PAK 101     | Pakistan Studies |
| ISL 101     | Islamic Studies  |

### c. General Courses

| Course Code | Course Title                            |
|-------------|-----------------------------------------|
| HSS 115     | Introduction to Media Studies           |
| HSS 111     | Introduction to International Relations |
| HSS 112     | Introduction to Political Science       |
| HSS 102     | Introduction to Philosophy              |
| HSS 117     | Introduction to Economics               |
| HSS 107     | Introduction to Psychology              |
| HSS 110     | Introduction to Development Studies     |
| HSS 201     | Introduction to Anthropology            |
| HSS 202     | Introduction to Sociology               |
| HSS 307     | Islamic History: The Formative Phase    |

### d. Basic Essential Skills

| Course Code | Course Title                            |
|-------------|-----------------------------------------|
| BES 101     | Introduction to Computer                |
| BES 102     | Creative Writing                        |
| BES 103     | Critical Thinking                       |
| BES 105     | Argumentation and Presentational Skills |
| BES 106     | Research Methodology                    |

### e. Basic Sciences

| Course Code | Course Title                           |
|-------------|----------------------------------------|
| MAT 105     | Mathematics                            |
| MAT 110     | Calculus & Analytical Geometry         |
| MAT 205     | Statistics                             |
| ENV 100     | Fundamentals of Biology                |
| ENV 105     | Introduction to Environmental Sciences |

|         |                                            |
|---------|--------------------------------------------|
| PHY 101 | Environmental Physics or Physics (PHY 101) |
| ENV 200 | Fundamentals of Ecology                    |

### **Majors in Development Studies**

Students of Development Studies must complete 78 credit hours of taught courses in their area of concentration with the following distribution:

- a) 24 hours of foundation courses; and
- b) 42 hours of elective courses,
- c) 12 hours of specialization

Optional research paper worth 6 credits from the 7th semester onwards is also offered. Those opting for research will be exempted from two courses worth 6 Credit hours.

### **Foundation Courses (08 Courses)**

|         |                                                  |
|---------|--------------------------------------------------|
| DST 301 | Introduction to Microeconomics                   |
| DST 302 | Introduction to Macroeconomics                   |
| DST 303 | Theories of Development: Contending Perspectives |
| HSS 400 | Philosophy of Social Sciences                    |
| HSS 402 | Qualitative Research Methods                     |
| HSS 401 | Statistical Analysis of Social Data              |
| DST 312 | Rural Development: Issues and Challenges         |
| DST 310 | Poverty Alleviation: Contending Approaches       |

### **Elective Courses (14 Courses)**

|         |                                                                |
|---------|----------------------------------------------------------------|
| DST 308 | Sociology of Development                                       |
| DST 401 | Sustainable Development & Livelihood Strategies                |
| DST 402 | Social Development: Issues & Approaches                        |
| DST 403 | Civil Society & Development                                    |
| DST 406 | Women Empowerment: Issues and Perspectives                     |
| DST 410 | Development Project: Planning, Appraisal & Implementation      |
| DST 411 | Development Project: Monitoring & Evaluation                   |
| DST 404 | Global Development Experiments                                 |
| DST 405 | Globalization & World Development                              |
| DST 337 | Governance, Democracy & Development in Countries in Transition |

|         |                                                          |
|---------|----------------------------------------------------------|
| DST 413 | Law & Development                                        |
| DST 338 | Disaster Management & Assistance                         |
| DST 339 | Foundation of Social Policy                              |
| DST 344 | Religion & Development                                   |
| DST 340 | Human Rights & Development                               |
| DST 341 | Conflict and Peace                                       |
| DST 342 | Political Paradigm in Developing Countries               |
| DST 343 | Health & Development: Perspectives, Issues and Practices |
| DST 345 | Contemporary Issues in Child Protection                  |

### **Specialization Courses (4 Courses)**

|         |                                            |
|---------|--------------------------------------------|
| DST 307 | Development Economics                      |
| DST 309 | International Development                  |
| DST 408 | Development Communication                  |
| DST 409 | Development Policy: Process & Institutions |
| DST 414 | Migration, Diaspora & Development          |
| DST 336 | Climate change Politics, Policy & Practice |

### **Research Courses (3 courses)**

|         |                                          |
|---------|------------------------------------------|
| RES 300 | Review of Literature & Research Proposal |
| RES 400 | Data Collection & Seminars               |
| RES 500 | Research Paper Writing & Defense         |

## **Majors in International Relations**

Students of International Relations must complete 78 credit hours of taught courses in their area of concentration with the following distribution:

- a) 24 hours of foundation courses; and
- b) 42 hours of elective courses,
- c) 12 hours of specialization

Optional research paper worth 6 credits from the 7th semester onwards is also offered. Those opting for research will be exempted from two courses worth 6 Credit hours.



## Foundation Courses (08 Courses)

|         |                                     |
|---------|-------------------------------------|
| IRS 301 | Theories of International Relations |
| IRS 307 | International Relations since 1945  |
| IRS 308 | International Organizations         |
| IRS 309 | International Law                   |
| IRS 403 | Theories of Globalization           |
| IRS 302 | Foreign Policy of Pakistan          |
| IRS 303 | Global Political Economy            |
| IRS 314 | Diplomacy                           |

## Elective Courses (14 Courses)

|         |                                             |
|---------|---------------------------------------------|
| IRS 313 | Foreign Policy Analysis                     |
| IRS 319 | Government and Politics in Pakistan         |
| IRS 310 | Foreign Policies of Great Powers            |
| IRS 401 | Human Rights & Global Politics              |
| IRS 402 | Global Environmental Politics               |
| IRS 409 | Strategic Studies                           |
| IRS 410 | Conflict & Conflict Resolution              |
| IRS 417 | Arms Control & Disarmament                  |
| IRS 323 | Comparative Political Systems               |
| IRS 311 | American Foreign Policy                     |
| IRS 404 | Issues in North-South Relations             |
| IRS 408 | International Terrorism                     |
| IRS 315 | Politics of Developing Nations              |
| IRS 411 | Religion & Politics                         |
| IRS 412 | Theories of Nationalism                     |
| IRS 413 | Democratic Transitions: Issues & Challenges |
| IRS 321 | Politics of Development                     |
| IRS 322 | International Financial Institutions        |
| IRS 415 | Global Governance & Development             |
| IRS 416 | Politics of Social Welfare                  |
| IRS 312 | The Muslim World & International Politics   |
| IRS 330 | Geo Political Structure of the World        |
| IRS 420 | Nuclear Security and Non-Proliferation      |



### Specialization Courses (4 courses)

|         |                                            |
|---------|--------------------------------------------|
| IRS 405 | International Politics of South Asia       |
| IRS 325 | State & Society of South Asia              |
| IRS 406 | International Politics of Central Asia     |
| IRS 320 | Government & Politics in Central Asia      |
| IRS 407 | International Politics of Southeast Asia   |
| IRS 326 | American Government & Politics             |
| IRS 327 | Politics in European Union                 |
| IRS 328 | Government and Politics in the Middle East |

### Research Courses (3 courses)

|         |                                          |
|---------|------------------------------------------|
| RES 300 | Review of Literature & Research Proposal |
| RES 400 | Data Collection & Seminars               |
| RES 500 | Research Paper Writing & Defense         |

## Majors in Anthropology

Students of Development Studies must complete 78 credit hours of taught courses in their area of concentration with the following distribution:

- a) 27 hours of foundation courses; and
- b) 24 hours of elective courses,
- c) 27 hours of major courses

Compulsory research paper worth 6 credits from the 7th semester onwards is also offered.

### Foundation Courses (09 courses)

|         |                               |
|---------|-------------------------------|
| ANT 102 | Anthropological Theories      |
| ANT 103 | Ethnographic Research Methods |
| ANT 104 | Kinship & Social Organization |
| ANT 105 | Physical Anthropology         |
| ANT 106 | Archaeological Anthropology   |
| ANT 107 | Linguistic Anthropology       |
| ANT 108 | Social & Cultural Change      |

|         |                       |
|---------|-----------------------|
| ANT 109 | Ethnology of Pakistan |
| ANT 110 | Applied Anthropology  |

### **Major Courses (09 courses)**

|         |                                       |
|---------|---------------------------------------|
| ANT 201 | Economic Anthropology                 |
| ANT 202 | Anthropology of Beliefs & Rituals     |
| ANT 203 | Medical Anthropology                  |
| ANT 204 | Environmental Anthropology            |
| ANT 205 | Political Anthropology                |
| ANT 206 | Urban Anthropology                    |
| ANT 207 | Anthropology of Globalization         |
| ANT 208 | Epistemology of Ethnographic Research |
| ANT 209 | Anthropology of Development           |

### **Elective Courses (08 courses)**

|         |                                      |
|---------|--------------------------------------|
| ANT 301 | Visual Anthropology                  |
| ANT 302 | Ethnomusicology                      |
| ANT 303 | Public Health                        |
| ANT 304 | Ethnomedicine                        |
| ANT 305 | Anthropology of Science & Technology |
| ANT 306 | Anthropology of Cyberspace           |
| ANT 307 | Legal Anthropology                   |
| ANT 308 | Anthropology of Public Policy        |
| ANT 309 | Migration & Diaspora                 |
| ANT 310 | Corporate Anthropology               |
| ANT 311 | Anthropology of Food                 |
| ANT 312 | Political Ecology                    |
| ANT 313 | Anthropology of Anthropocene         |
| ANT 314 | Disasters & Displacement             |
| ANT 315 | Urban Anthropology                   |
| ANT 316 | Anthropology of South Asia           |
| ANT 317 | Anthropology of Education & Learning |
| ANT 318 | Psychological Anthropology           |
| ANT 319 | Sociolinguistics                     |



|         |                                      |
|---------|--------------------------------------|
| ANT 320 | Asia Civilizations                   |
| ANT 321 | Museum Anthropology                  |
| ANT 322 | Forensic Anthropology                |
| ANT 323 | Anthropology of Islam                |
| ANT 324 | Gender & Society                     |
| ANT 325 | Anthropology of Peace & Conflict     |
| ANT 326 | Myths and Folklore                   |
| ANT 327 | Ethnicity, Nationality & Identity    |
| ANT 328 | Anthropology of Art                  |
| ANT 329 | Anthropology of Crimes & Criminality |
| ANT 330 | Anthropology of Media                |



## Road Map of BSS

### Semester 1

| S# | Course Code | Title                                   | Core/Elective Courses | Credit Hours |
|----|-------------|-----------------------------------------|-----------------------|--------------|
| 1  | ENG 103     | English-I                               | C                     | 3            |
| 2  | BES 101     | Introduction to Computers               | C                     | 3            |
| 3  | HSS 110     | Introduction to Development Studies     | C                     | 3            |
| 4  | HSS 111     | Introduction to International Relations | C                     | 3            |
| 5  | HSS 115     | Introduction to Media Studies           | C                     | 3            |
| 6  | PAK 101     | Pakistan Studies                        | C                     | 2            |

### Semester 2

| S# | Course Code | Title                                  | Core/Elective Courses | Credit Hours |
|----|-------------|----------------------------------------|-----------------------|--------------|
| 1  | BES 103     | Critical Thinking                      | C                     | 3            |
| 2  | ENG 104     | English-II                             | C                     | 3            |
| 3  | ENV 110     | Introduction to Environmental Sciences | C                     | 3            |
| 4  | HSS 102     | Introduction to Philosophy             | C                     | 3            |
| 5  | HSS 202     | Introduction to Sociology              | C                     | 3            |
| 6  | BES 106     | Research Methodology                   | C                     | 3            |

### Semester 3

| S# | Course Code | Title                             | Core/Elective Courses | Credit / Contact Hours |
|----|-------------|-----------------------------------|-----------------------|------------------------|
| 1  | HSS 201     | Introduction to Anthropology      | C                     | 3                      |
| 2  | HSS 112     | Introduction to Political Science | C                     | 3                      |
| 3  | HSS 107     | Introduction to Psychology        | C                     | 3                      |
| 4  | ISL 101     | Islamic Studies                   | C                     | 2                      |
| 5  | MAT 105     | Mathematics                       | C                     | 3                      |
| 6  | ENG 105     | Oral Communication                | C                     | 3                      |

### MAJORS IN INTERNATIONAL RELATIONS

#### Semester 4

| S# | Course Code | Title                                | Core/Elective Courses | Credit Hours |
|----|-------------|--------------------------------------|-----------------------|--------------|
| 1  | IRS 301     | Theories of International Relations  | C                     | 3            |
| 2  | IRS 302     | Foreign Policy of Pakistan           | C                     | 3            |
| 3  | IRS 307     | International Relations Since 1945   | C                     | 3            |
| 4  | IRS 330     | Geo-Political Structure of the World | E                     | 3            |
| 5  | IRS 314     | Diplomacy                            | E                     | 3            |
| 6  | IRS 409     | Strategic Studies                    | E                     | 3            |



## Semester 5

| S# | Course Code | Title                          | Core/Elective Courses | Credit Hours |
|----|-------------|--------------------------------|-----------------------|--------------|
| 1  | IRS 303     | Global Political Economy       | E                     | 3            |
| 2  | IRS 308     | International Organizations    | E                     | 3            |
| 3  | IRS 309     | International Law              | E                     | 3            |
| 4  | IRS 311     | American Foreign Policy        | E                     | 3            |
| 5  | IRS 403     | Theories of Globalization      | E                     | 3            |
| 6  | IRS 410     | Conflict & Conflict Resolution | C                     | 3            |

## Semester 6

| S# | Course Code | Title                             | Core/Elective Courses | Credit Hours |
|----|-------------|-----------------------------------|-----------------------|--------------|
| 1  | IRS 417     | Arms Control & Disarmament        | E                     | 3            |
| 2  | IRS 319     | Government & Politics in Pakistan | E                     | 3            |
| 3  | IRS 323     | Comparative Political System      | E                     | 3            |
| 4  | IRS 415     | Global Governance & development   | E                     | 3            |
| 5  | IRS 417     | Arms Control & Disarmament        | E                     | 3            |
| 6  | IRS 408     | International Terrorism           | E                     | 3            |

## Semester 7

| S# | Course Code | Title                                    | Core/Elective Courses | Credit Hours |
|----|-------------|------------------------------------------|-----------------------|--------------|
| 1  | IRS 310     | Foreign Policy of Great Powers           | E                     | 3            |
| 2  | IRS 405     | International Politics of South Asia     | E                     | 3            |
| 3  | IRS 406     | International Politics of Central Asia   | E                     | 3            |
| 4  | IRS 412     | Theories of Nationalism                  | E                     | 3            |
| 5  | RES 300     | Review of Literature & Research Proposal | E                     | 1            |
| 6  | RES 400     | Data Collection & Seminars               | E                     | 3            |

## Semester 8

| S# | Course Code | Title                                    | Core/Elective Courses | Credit Hours |
|----|-------------|------------------------------------------|-----------------------|--------------|
| 1  | IRS 328     | Government & Politics in the Middle East | E                     | 3            |
| 2  | IRS 401     | Human Rights & Global Politics           | E                     | 3            |
| 3  | IRS 407     | International Politics of Southeast Asia | E                     | 3            |
| 4  | IRS 418     | China in International Politics          | E                     | 3            |
| 5  | RES 500     | Research Paper Writing & Defense         | E                     | 2            |

## MAJORS IN DEVELOPMENT STUDIES

### Semester 4

| S# | Course Code | Title                                            | Core/Elective Courses | Credit Hours |
|----|-------------|--------------------------------------------------|-----------------------|--------------|
| 1  | DST 301     | Introduction to Microeconomics                   | C                     | 3            |
| 2  | DST 303     | Theories of Development: Contending Perspectives | E                     | 3            |
| 3  | DST 310     | Poverty Alleviation: Contending Approaches       | C                     | 3            |
| 4  | DST 312     | Rural Development: Issues & Challenges           | C                     | 3            |
| 5  | HSS 402     | Qualitative Research Methods                     | C                     | 3            |
| 6  | HSS 400     | Philosophy of Social Sciences                    | C                     | 3            |

### Semester 5

| S# | Course Code | Title                                                     | Core/Elective Courses | Credit Hours |
|----|-------------|-----------------------------------------------------------|-----------------------|--------------|
| 1  | HSS 401     | Statistical Analysis of Social Data                       | C                     | 3            |
| 2  | DST 302     | Introduction to Macroeconomics                            | C                     | 3            |
| 3  | DST 343     | Health & Development: Perspectives, Issues & Challenges   | C                     | 3            |
| 4  | DST 344     | Foundation of Social Policy                               | C                     | 3            |
| 5  | DST 406     | Women Empowerment: Issues & Perspectives                  | E                     | 3            |
| 6  | DST 410     | Development Project: Planning, Appraisal & Implementation | C                     | 3            |

## Semester 6

| S# | Course Code | Title                                        | Core/Elective Courses | Credit Hours |
|----|-------------|----------------------------------------------|-----------------------|--------------|
| 1  | DST 338     | Disaster Management & Assistance             | C                     | 3            |
| 2  | DST 340     | Human Rights & Development                   | C                     | 3            |
| 3  | DST 345     | Contemporary Issues in Child Protection      | E                     | 3            |
| 4  | DST 405     | Globalization & World Development            | E                     | 3            |
| 5  | DST 411     | Development Project: Monitoring & Evaluation | E                     | 3            |
| 6  | DST 413     | Law & Development                            | E                     | 3            |

## Semester 7

| S# |         | Title                                           | Core/Elective Courses | Credit Hours |
|----|---------|-------------------------------------------------|-----------------------|--------------|
| 1  | DST 307 | Development Economics                           | C                     | 3            |
| 2  | DST 341 | Conflict & Peace                                | E                     | 3            |
| 3  | DST 401 | Sustainable Development & Livelihood Strategies | E                     | 3            |
| 4  | DST 408 | Development Communication                       | C                     | 3            |
| 5  | RES 300 | Review of Literature & Research Proposal        | E                     | 1            |
| 6  | RES 400 | Data Collection & Seminars                      | E                     | 3            |



## Semester 8

| S# | Course Code | Title                                                          | Core/Elective Courses | Credit Hours |
|----|-------------|----------------------------------------------------------------|-----------------------|--------------|
| 1  | DST 335     | Climate Change Politics, Policy & Practice                     | E                     | 3            |
| 2  | DST 337     | Governance, Democracy & Development in Countries in Transition | E                     | 3            |
| 3  | DST 403     | Civil Society & Development                                    | E                     | 3            |
| 4  | DST 414     | Migration, Diaspora & Development                              | E                     | 3            |
| 5  | RES 500     | Research Paper Writing & Defense                               | E                     | 2            |

## Majors in Sociology

### Semester 4

| Course Code | Course Title                      | Credit Hours | Pre-Requisite |
|-------------|-----------------------------------|--------------|---------------|
| SCO 301     | Classical Sociological Theories   | 3            |               |
| SCO 304     | Quantitative Research Methodology | 3            |               |
| SCO 307     | Sociology of Gender Issues        | 3            |               |
| HSS 400     | Philosophy of Social Sciences     | 3            |               |
| Major 1     |                                   | 3            |               |
| Major 2     |                                   | 3            |               |

### Semester 5

| Course Code | Course Title                          | Credit Hours | Pre-Requisite |
|-------------|---------------------------------------|--------------|---------------|
| SCO 302     | Pakistani Society and Culture         | 3            |               |
| SCO 303     | Sociology of Migration & Urbanization | 3            |               |
| SCO 305     | Qualitative Research Methodology      | 3            |               |
| SCO 306     | Contemporary Sociological theories    | 3            |               |
| Major 1     |                                       | 3            |               |
| Major 2     |                                       | 3            |               |

### Semester 6

| Course Code | Course Title | Credit Hours | Pre-Requisite |
|-------------|--------------|--------------|---------------|
| Major 1     |              | 3            |               |
| Major 2     |              | 3            |               |
| Major 3     |              | 3            |               |
| Major 4     |              | 3            |               |
| Major 5     |              | 3            |               |
| Major 6     |              | 3            |               |

|         |  |   |  |
|---------|--|---|--|
| Major 1 |  | 3 |  |
| Major 2 |  | 3 |  |

### Semester 6

| Course Code | Course Title | Credit Hours | Pre-Requisite |
|-------------|--------------|--------------|---------------|
| Major 1     |              | 3            |               |
| Major 2     |              | 3            |               |
| Major 3     |              | 3            |               |
| Major 4     |              | 3            |               |
| Major 5     |              | 3            |               |
| Major 6     |              | 3            |               |

Possible time for 2-months Internship in the summers.

### Semester 7

| Course Code | Course Title                             | Credit Hours | Pre-Requisite |
|-------------|------------------------------------------|--------------|---------------|
| Major 1     |                                          | 3            |               |
| Major 2     |                                          | 3            |               |
| Minor 1     |                                          | 3            |               |
| Minor 2     |                                          | 3            |               |
| RES 300     | Review of Literature & Research Proposal | 1            |               |
| RES 400     | Data Collection & Seminars               | 3            |               |

### Semester 8

| Course Code | Course Title | Credit Hours | Pre-Requisite |
|-------------|--------------|--------------|---------------|
| Major 1     |              | 3            |               |
| Major 2     |              | 3            |               |
| Minor 1     |              | 3            |               |

|         |                                   |   |                            |
|---------|-----------------------------------|---|----------------------------|
| Minor 2 |                                   | 3 |                            |
| RES 500 | Research Paper, Writing & Defense | 2 | Data Collection & Seminars |

**Note:** RES 300, RES 400 and RES 500 are for Research Students Only.

### **Majors in Sociology**

Students of Sociology must complete 78 credit hours of taught courses in their area of concentration with the following distribution:

- a) 24 hours of foundation courses; and
- b) 42 hours of major courses,
- c) 12 hours of minor courses.

Optional research paper worth 6 credits from the 7th semester onwards is also offered. Those opting for research will be exempted from two courses worth 6 Credit hours.

#### **Foundation Courses (08 Courses)**

|         |                                       |
|---------|---------------------------------------|
| SCO 301 | Classical Sociological Theories       |
| SCO 302 | Pakistani Society and Culture         |
| SCO 303 | Sociology of Migration & Urbanization |
| SCO 304 | Quantitative Research Methodology     |
| SCO 305 | Qualitative Research Methodology      |
| SCO 306 | Contemporary Sociological theories    |
| SCO 307 | Sociology of Gender Issues            |
| HSS 400 | Philosophy of Social Sciences         |

#### **Major Courses (14 Courses)**

|         |                                            |
|---------|--------------------------------------------|
| SCO 308 | Sociology of Youth                         |
| SCO 309 | Project Planning and Management            |
| SCO 310 | Community Development                      |
| SCO 311 | Population Dynamics                        |
| SCO 312 | Rural Sociology                            |
| SCO 313 | Urban Sociology                            |
| SCO 314 | Sociology of Health                        |
| SCO 315 | Sociology of Social Change and Development |
| SCO 316 | Sociology of Education                     |
| SCO 317 | Sociology of Globalization                 |

|         |                                 |
|---------|---------------------------------|
| SCO 318 | Organizational Behaviour        |
| SCO 319 | Human Resource Management       |
| SCO 320 | Political Sociology             |
| SCO 321 | Environmental Sociology         |
| SCO 322 | Conflict Resolution             |
| SCO 323 | Clinical Sociology              |
| SCO 324 | Sociology of Media              |
| SCO 325 | Sociology of Law & Human Rights |
| SCO 326 | Rural Development               |
| SCO 327 | Urban Development               |
| SCO 328 | Industrial Sociology            |
| SCO 329 | Islamic Sociology               |
| SCO 330 | Sociology of Aging              |
| SCO 331 | Sociology of Race and Ethnicity |

#### **Minor Courses (4 Courses)**

|         |                                           |
|---------|-------------------------------------------|
| SCO 332 | Criminology                               |
| SCO 333 | NGO Management                            |
| SCO 334 | Sociology of Religion                     |
| SCO 335 | Sociology of Emotions and Human Feelings  |
| SCO 336 | Sociology of Family and Marriage          |
| SCO 337 | Sociology of Violence & Terrorism         |
| SCO 338 | Sociology of Governance and Social Policy |
| SCO 339 | Public Sociology                          |

#### **Research Courses (3 courses)**

|         |                                          |
|---------|------------------------------------------|
| RES 300 | Review of Literature & Research Proposal |
| RES 400 | Data Collection & Seminars               |
| RES 500 | Research Paper Writing & Defense         |

## BS English (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

Intermediate Examination or its equivalent with minimum of 50% marks in any discipline and at least 50% marks in the subject of English

### Roadmap

#### Semester 1

**CR (18)**

| Course Code    | Course Title                                  | Credit Hours | Pre-req |
|----------------|-----------------------------------------------|--------------|---------|
| <b>ENG-105</b> | Functional English (English-I)                | <b>3</b>     |         |
| <b>PAK-101</b> | Pakistan Studies                              | <b>3</b>     |         |
| <b>ENG-103</b> | Introduction to Literature-1 (Drama & Poetry) | <b>3</b>     |         |
| <b>ENG-104</b> | Introduction to Linguistics                   | <b>3</b>     |         |
| <b>HSS-102</b> | Introduction to Philosophy                    | <b>3</b>     |         |
| <b>HSS-107</b> | Introduction to Psychology                    | <b>3</b>     |         |

#### Semester 2

**CR (18)**

| Course Code    | Course Title                            | Credit Hours | Pre-req            |
|----------------|-----------------------------------------|--------------|--------------------|
| <b>ENG-120</b> | English Writing Skills(English-II)      | <b>3</b>     | Functional English |
| <b>ISL-101</b> | Islamic Studies                         | <b>3</b>     |                    |
| <b>HSS-111</b> | Introduction to International Relations | <b>3</b>     |                    |

|                |                                                            |          |  |
|----------------|------------------------------------------------------------|----------|--|
| <b>ENG-110</b> | History of English Literature-1<br>(Medieval to Romantics) | <b>3</b> |  |
| <b>MAT-105</b> | Mathematics                                                | <b>3</b> |  |
| <b>ENG-112</b> | Phonetics and Phonology                                    | <b>3</b> |  |

### Semester 3

**CR (18)**

| Course Code    | Course Title                                 | Credit Hours | Pre-req                                       |
|----------------|----------------------------------------------|--------------|-----------------------------------------------|
| <b>ENG-201</b> | Oral Communication & Presentation Skills     | <b>3</b>     |                                               |
| <b>ENG-202</b> | Morphology and syntax-1                      | <b>3</b>     |                                               |
| <b>ENG-203</b> | Introduction to Literature-2 (novel & prose) | <b>3</b>     | Introduction to Literature-1 (Drama & Poetry) |
| <b>BES-204</b> | Introduction to Computer Application         | <b>3</b>     |                                               |
| <b>ECO-205</b> | Economics                                    | <b>3</b>     |                                               |
| <b>MGT-206</b> | Entrepreneurship                             | <b>3</b>     |                                               |

### Semester 4

**CR (18)**

| Course Code    | Course Title                                 | Credit Hours | Pre-req                                       |
|----------------|----------------------------------------------|--------------|-----------------------------------------------|
| <b>ENG-201</b> | Oral Communication & Presentation Skills     | <b>3</b>     |                                               |
| <b>ENG-202</b> | Morphology and syntax-1                      | <b>3</b>     |                                               |
| <b>ENG-203</b> | Introduction to Literature-2 (novel & prose) | <b>3</b>     | Introduction to Literature-1 (Drama & Poetry) |

|                |                                      |          |  |
|----------------|--------------------------------------|----------|--|
| <b>BES-204</b> | Introduction to Computer Application | <b>3</b> |  |
| <b>ECO-205</b> | Economics                            | <b>3</b> |  |
| <b>MGT-206</b> | Entrepreneurship                     | <b>3</b> |  |

### Semester 5

**CR (18)**

| Course Code    | Literature(Major)                                  | Linguistics(Major)                  | Course Code    | Pre-req                 |
|----------------|----------------------------------------------------|-------------------------------------|----------------|-------------------------|
| <b>ENG-301</b> | Visionary discourse (3)- compulsory                | Visionary discourse (3) -compulsory | <b>ENG-301</b> |                         |
| <b>ENG-302</b> | Literary Criticism (3)                             | Morphology and syntax-II (3)        | <b>ENG-309</b> | Morphology and syntax-I |
| <b>ENG-303</b> | Classical poetry (14-18 <sup>th</sup> century) (3) | Sociolinguistics (3)                | <b>ENG-310</b> |                         |
| <b>ENG-304</b> | Novel (18-19 <sup>th</sup> century) (3)            | Pedagogical Grammar (3)             | <b>ENG-311</b> |                         |
|                | Linguistics-1 (3)                                  | Literature -1 (3)                   |                |                         |
|                | Linguistics-2 (3)                                  | Literature -2 (3)                   |                |                         |

### Semester 6

**CR (15)**

| Course Code     | Literature (Major)               | Linguistics (Major)       | Course Code    | Pre-req            |
|-----------------|----------------------------------|---------------------------|----------------|--------------------|
| <b>ENG- 305</b> | Research Methodology (3)         | Research Methodology (03) | <b>ENG-305</b> |                    |
| <b>ENG-306</b>  | Literary Criticism and theory(3) | Discourse analysis (3)    | <b>ENG-312</b> | Literary criticism |

|                |                                                   |                       |                 |  |
|----------------|---------------------------------------------------|-----------------------|-----------------|--|
| <b>ENG-307</b> | Classics in drama (3)                             | Psycholinguistics (3) | <b>ENG- 313</b> |  |
| <b>ENG-308</b> | Romantic poetry (19-20 <sup>th</sup> century) (3) | Lexical studies (3)   | <b>ENG- 314</b> |  |
|                | Linguistics-3 (3)                                 | Literature -3 (3)     |                 |  |

### Semester 7

**CR (15)**

| Course Code    | Literature (core)                             | Linguistics (core)                 | Course Code    | Pre-req |
|----------------|-----------------------------------------------|------------------------------------|----------------|---------|
| <b>ENG-401</b> | Contemporary literature-1(poetry& drama) (3)  | Stylistics (3)                     | <b>ENG-405</b> |         |
| <b>ENG-402</b> | South Asian literature (3)                    | Language learning theories (3)     | <b>ENG-406</b> |         |
| <b>ENG-403</b> | American and Canadian literature (3)          | Syllabus designing and testing (3) | <b>ENG-407</b> |         |
| <b>ENG-404</b> | Translational theory and literary studies (3) | TEFEL-1 (3)                        | <b>ENG-408</b> |         |
|                | Electives 1 and 2 (3+3)                       | Electives 1 and 2 (3+3)            |                |         |

**Semester 8****CR (15)**

| Course Code    | Literature (core)                             | Linguistics (core)                      | Course Code    | Pre-req                                          |
|----------------|-----------------------------------------------|-----------------------------------------|----------------|--------------------------------------------------|
| <b>ENG-409</b> | Contemporary literature-2 (Prose & Novel) (3) | TEFEL-2 (3)                             | <b>ENG-412</b> | Contemporary literature-1(poetry& drama) TEFEL-1 |
| <b>ENG-410</b> | Post-colonial literature (3)                  | Pragmatics(3)                           | <b>ENG-413</b> |                                                  |
| <b>ENG-411</b> | Literary discourse & journalistic writing (3) | Introduction to Applied Linguistics (3) | <b>ENG-414</b> |                                                  |
|                | Electives 3 and 4 (3+3)                       | Electives 3 and 4 (3+3)                 |                |                                                  |
|                | Research Thesis/Project (3)                   | Research Thesis/Project (3)             |                |                                                  |



## Bachelor of Science in Mathematics

**Program Name:** Bachelor of Science (BS) in Mathematics

**Duration:** 4 Years (8 Semesters)

**Campus:** BUKC

### Eligibility Criteria:

The candidates seeking admission must secure at least 50% marks in aggregate in F.Sc. / ICS / DAE / General Science with major subject Mathematics.

Or

Any other examination of Foreign University/ institution/ Examining Body, equivalent to intermediate with Mathematics, Equivalence and percentage of Marks will be determined by IBCC

### ROADMAP

#### 1st Semester

| S.N | Course Codes | Course Title                          | Cr. Hr. |
|-----|--------------|---------------------------------------|---------|
| 1   | MAT 101      | Calculus -I                           | 3       |
| 2   | ECO 101      | Economics                             | 3       |
| 3   | PHY 101      | Physics 1                             | 2+1     |
| 4   | ENG 105      | Functional English                    | 3       |
| 5   | MIT 101      | Introduction to Computer Applications | 2+1     |
| 6   | PAK-102      | Pakistan Studies                      | 3       |

## 2nd Semester

| S.N | Course Codes | Course Title                             | Cr. Hr. |
|-----|--------------|------------------------------------------|---------|
| 1   | MAT-102      | Calculus -II                             | 3       |
| 2   | ECO-102      | Econometrics                             | 3       |
| 3   | PHY-102      | Physics II                               | 2+1     |
| 4   | ENG-120      | English writing skills(English II)       | 3       |
| 5   | MIT-102      | Programming Languages for Mathematicians | 2+1     |
| 6   | ISL-102      | Islamic Studies                          | 3       |

## 3rd Semester

| S.N | Course Codes | Course Title                                              | Cr. Hr. |
|-----|--------------|-----------------------------------------------------------|---------|
| 1   | MAT-201      | Calculus -III                                             | 3       |
| 2   | MAT-202      | Number Theory                                             | 3       |
| 3   | MAT-203      | Quantitative Data Analysis                                | 2+1     |
| 4   | ENG-201      | Oral communication & Presentation skills<br>(English III) | 3       |
| 5   | MIT-103      | Computing Tools for Mathematicians                        | 2+1     |

## 4th Semester

| S.N | Course Codes | Course Title                  | Cr. Hr. |
|-----|--------------|-------------------------------|---------|
| 1   | MAT-205      | Linear Algebra                | 3       |
| 2   | MAT-206      | Vectors and Tensor Analysis   | 3       |
| 3   | MAT-207      | Qualitative Data Analysis     | 2+1     |
| 4   | MAT-208      | Real Analysis                 | 3       |
| 5   | MAT-209      | Probability and Distributions | 3       |



## 5th Semester

| S.N | Course Codes | Course Title                    | Cr. Hr. |
|-----|--------------|---------------------------------|---------|
| 1   | MAT-301      | Ordinary Differential equations | 3       |
| 2   | MAT-302      | Discrete Mathematics            | 3       |
| 3   | MAT-303      | Abstract Algebra                | 3       |
| 4   | MAT-304      | Inferential Statistics          | 3       |
| 5   | MAT-305      | Numerical Analysis I            | 3       |

## 6th Semester

| S.N | Course Codes | Course Title                   | Cr. Hr. |
|-----|--------------|--------------------------------|---------|
| 1   | MAT-306      | Numerical Analysis II          | 3       |
| 2   | MAT-307      | Partial Differential equations | 3       |
| 3   | MAT-308      | Complex Analysis               | 3       |
| 4   | MAT-309      | Classical Mechanics            | 3       |
| 5   | MAT-310      | Experimental Design            | 2+1     |

## 7th Semester

| S.N | Course Codes | Course Title          | Cr. Hr. |
|-----|--------------|-----------------------|---------|
| 1   | MAT-401      | Differential Geometry | 3       |
| 2   | MAT-402      | Operational Research  | 3       |
| 3   | MAT-403      | Functional Analysis   | 3       |
| 4   |              | Elective I            | 3       |
| 5   |              | Elective II           | 3       |

## 8th Semester

| S.N | Course Codes | Course Title             | Cr. Hr. |
|-----|--------------|--------------------------|---------|
| 1   | MAT-404      | Fluid Dynamics           | 3       |
| 2   | MAT-405      | Optimization theory      | 3       |
| 3   | MAT-406      | Mathematical Simulations | 3       |
| 4   |              | Elective III             | 3       |
| 5   |              | Elective IV              | 3       |

BS (Mathematics) is a 126 credit hours program of studies spread over eight semesters.

## ELECTIVES COURSES

| APPLIED MATHEMATICS |                              |
|---------------------|------------------------------|
| MAT-407             | Electromagnetism I           |
| MAT-408             | Electromagnetism II          |
| MAT-409             | Graph theory                 |
| MAT-410             | Finite Element Analysis      |
| MAT-411             | Mathematical physics         |
| MAT-412             | Quantum mechanics            |
| MAT-413             | Heat Transfer                |
| MAT-414             | Finite Difference Analysis   |
| MAT-415             | Astronomy                    |
| MAT-416             | Fuzzy logic                  |
| MAT-417             | Fuzzy Differential Equations |
| MAT-418             | Stochastic                   |

| PURE MATHEMATICS |                          |
|------------------|--------------------------|
| MAT-419          | Projective geometry      |
| MAT-420          | Topology                 |
| MAT-421          | General Relativity       |
| MAT-422          | Tensor Analysis          |
| MAT-423          | Rings & Modules          |
| MAT-424          | Galois theory            |
| MAT-425          | Analytical Number Theory |
| MAT-426          | Advanced field theory    |
| MAT-427          | Group Theory             |



## MS English (Linguistics)

**Campus:** Islamabad & Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:** 16 years of education preferably BS English/MA English is required to apply for admission.

### Road Map

#### Semester 1

| Course Codes | Course Title                                     | CH |
|--------------|--------------------------------------------------|----|
| ENG702       | Advanced Research Methods in Applied Linguistics | 3  |
| ENG703       | Linguistic Theories and the Study of Language    | 3  |
| -            | Elective-I                                       | 3  |
| -            | Elective-II                                      | 3  |

#### Semester 2

| Course Codes | Course Title                         | CH |
|--------------|--------------------------------------|----|
| ENG 704      | Critical Discourse Analysis          | 3  |
| ENG 705      | Emerging Perspectives in Linguistics | 3  |
| -            | Elective-III                         | 3  |
| -            | Elective-IV                          | 3  |

### Semester 3

| Codes  | Courses | CH |
|--------|---------|----|
| THS800 | Thesis  | 3  |

### Semester 4

| Codes  | Courses | CH |
|--------|---------|----|
| THS800 | Thesis  | 3  |

### LIST OF ELECTIVE COURSES FOR MS IN ENGLISH (LINGUISTICS)

| Course Codes | Course Title                                          | CH |
|--------------|-------------------------------------------------------|----|
| ENG711       | Corpus Linguistics for Language Research              | 3  |
| ENG712       | Stylistics for Writers and Editors                    | 3  |
| ENG713       | Language in the Digital Age                           | 3  |
| ENG714       | Systemic Functional Linguistics for Language Research | 3  |
| ENG715       | Language Culture and Communication                    | 3  |
| ENG716       | Language Program Evaluation and Assessment            | 3  |
| ENG717       | Advanced Cognitive Linguistics                        | 3  |
| ENG718       | Sociolinguistics for Language Research                | 3  |
| ENG719       | English Around the World                              | 3  |
| ENG720       | Applied Linguistics for Language Professionals        | 3  |
| ENG721       | ELTin21 <sup>st</sup> Century                         | 3  |

### LIST OF DEFICIENCY COURSES

| Course Code | Course Title                        | CH |
|-------------|-------------------------------------|----|
| ENG414      | Introduction to Applied Linguistics | 3  |
| ENG306      | Discourse analysis                  | 3  |
| ENG210      | Semantics                           | 3  |
| ENG405      | Stylistics                          | 3  |

## MS International Relations (2 Years)

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

Candidates must meet the following minimum criteria for admissions in MS International Relations as per the rules of HEC.

1. Sixteen years of education In International Relations, Anthropology, Sociology, Development Studies, Political Science, Gender Studies, Behavioral Sciences, and Pakistan Studies or in a related field.
2. A minimum CGPA of 2.0 in the semester system or 50% marks in the annual system is mandatory.
3. Candidates must pass the entry test of Bahria University or GAT-General conducted by the National Testing Service with a minimum 50% cumulative score.

### MS IR

#### Distribution of Courses/Road Map

##### Semester 1

| S# | Course Code | Course Title                                          | Credit Hours | Core Courses/<br>Elective Courses |
|----|-------------|-------------------------------------------------------|--------------|-----------------------------------|
| 1  | [IRS 501    | International Relations: Advanced Theory and Practice | 3            | C                                 |
| 2  | IRS 502     | Advanced Research Methodology                         | 3            | C                                 |
| 3  | IRS 504     | Traditional & Non-Traditional Security Paradigms      | 3            | C                                 |
| 4  | IRS 524     | Foreign Policy Analyses                               | 3            | E                                 |

## Semester 2

| S# | Course Code | Course Title                                     | Credit Hours | Core Courses/<br>Elective Courses |
|----|-------------|--------------------------------------------------|--------------|-----------------------------------|
| 1  | IRS 531     | Conflict & Cooperation in South Asia             | 3            | E                                 |
| 2  | IRS 539     | Power Politics & Beyond                          | 3            | E                                 |
| 3  | [IRS 512    | Foreign Policy of United States                  | 3            | E                                 |
| 4  | [IRS 503    | Seminar on Contemporary Regional & Global Issues | 3            | E                                 |

## Semester 3,4

| S# | Course Code | Course Title | Credit Hours | Core Courses/Elective Courses |
|----|-------------|--------------|--------------|-------------------------------|
| 1  | THS 701     | Thesis       | 3            | C                             |
| 2  | THS 701     | Thesis       | 3            | C                             |

## MS Applied Anthropology (2 Years)

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:** Candidates with 16 years of education in Social/Natural Sciences and related disciplines having CGPA of 2.0/4.0 in the semester system, or 50% marks in the annual system. Candidate must pass the entry test of Bahria University or GAT-General.

### ROAD MAP – MASTER OF SCIENCE IN APPLIED ANTHROPOLOGY

#### Semester 1

| S No | Course Title                                  | Credit Hours |
|------|-----------------------------------------------|--------------|
| 1    | Applied Anthropology in Community Development | 3            |
| 2    | History of Anthropological Thought            | 3            |
| 3    | Optional-1                                    | 3            |
| 4    | Optional-2                                    | 3            |
|      | <b>Total</b>                                  | <b>12</b>    |

#### Semester 2

| S No | Course Title                          | Credit Hours |
|------|---------------------------------------|--------------|
| 1    | Research Methods in Anthropology      | 3            |
| 2    | Contemporary Anthropological Theories | 3            |
| 3    | Optional-2                            | 3            |
| 4    | Optional-3                            | 3            |
|      | <b>Total</b>                          | <b>12</b>    |

#### Semester 3 & 4

| Semester         | Name of the Subject | Credits Hours |
|------------------|---------------------|---------------|
| Third and Fourth | Thesis              | 6             |

## DETAILS OF CORE AND OPTIONAL COURSES

### CORE COURSES

| NO | Course Name                                   | Credit hours |
|----|-----------------------------------------------|--------------|
| 1  | Applied Anthropology in Community Development | 3            |
| 2  | History of Anthropological Thought            | 3            |
| 3  | Research Methods in Anthropology              | 3            |
| 4  | Contemporary Anthropological Theories         | 3            |

### OPTIONAL COURSES

| NO | Course Name                                            | Credit hours |
|----|--------------------------------------------------------|--------------|
| 1  | Technology and Cultural Growth                         | 3            |
| 2  | Medical Anthropology                                   | 3            |
| 3  | Digital Anthropology                                   | 3            |
| 4  | Cultural Aspects of International Development          | 3            |
| 5  | Anthropology of Human Rights                           | 3            |
| 6  | Anthropological Studies of Women                       | 3            |
| 7  | Philosophy of Social Sciences                          | 3            |
| 9  | Environmental Anthropology                             | 3            |
| 10 | Myth and Folklore                                      | 3            |
| 11 | Anthropological Perspective on Women and Development   | 3            |
| 12 | Anthropology of Religion                               | 3            |
| 13 | Anthropology of Media                                  | 3            |
| 14 | Women's Rights & Politics in Islamic Society           | 3            |
| 15 | Anthropology of Tourism and Cultural Heritage          | 3            |
| 16 | Disaster, Displacement and Risk Management             | 3            |
| 17 | Migration, Diaspora and Development                    | 3            |
| 18 | Human Resource Management: An Anthropological Approach | 3            |
| 19 | Business Anthropology                                  | 3            |
| 20 | Development Communication                              | 3            |
| 21 | Anthropology of Globalization                          | 3            |



## MS Government & Public Policy (2 Years)

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

16 Years of education from HEC recognized university in the relevant discipline with a Minimum CGPA 2.0/4.0 or 50% marks where CGPA is not given.

### Road Map of MS Government & Public Policy

#### 1st Semester- MS 1st Year

| S No | Course Title                   | Course Code | Credit Hours |
|------|--------------------------------|-------------|--------------|
| 1    | Introduction to Public Policy  |             | 3            |
| 2    | Public Policy and Institutions |             | 3            |
| 3    | Optional-1                     |             | 3            |
| 4    | Optional – 2                   |             | 3            |
|      | <b>Total</b>                   |             | <b>12</b>    |

#### 2nd Semester- MS 1st Year

| S No | Course Title                          | Course Code | Credit Hours |
|------|---------------------------------------|-------------|--------------|
| 1    | Political Economy of Public Policy    |             | 3            |
| 2    | Advance Research Methods & Techniques |             | 3            |
| 3    | Optional-3                            |             | 3            |
| 4    | Optional-4                            |             | 3            |
|      | <b>Total</b>                          |             | <b>12</b>    |

## DETAIL OF CORE AND OPTIONAL COURSES

### CORE COURSES

| NO | Course Name                           | Course Code | Credit hours |
|----|---------------------------------------|-------------|--------------|
| 1  | Introduction to Public Policy         | GPP- 501    | 3            |
| 2  | Public Policy and Institutions        | GPP - 502   | 3            |
| 3  | Political Economy of Public Policy    | GPP – 503   | 3            |
| 4  | Advance Research Methods & Techniques | GPP- 504    | 3            |

### OPTIONAL COURSES

| NO | Course Name                                  | Course Code | Credit hours |
|----|----------------------------------------------|-------------|--------------|
| 1  | Social Policy                                |             | 3            |
| 2  | Urban Development                            |             | 3            |
| 3  | Health Policy                                |             | 3            |
| 4  | Evidence in Public Policy                    |             | 3            |
| 5  | Global and Local Governance                  |             | 3            |
| 6  | Migration Governance in Times of Crisis      |             | 3            |
| 7  | Public Policy for Agrarian Markets           |             | 3            |
| 8  | Data and Development                         |             | 3            |
| 9  | Qualitative Methods for Public Policy        |             | 3            |
| 10 | Law and Public Policy                        |             | 3            |
| 11 | Public Policy of gender-sensitive governance |             | 3            |
| 12 | The Public Policy of Elections               |             | 3            |



## PhD International Relations (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

### **Entry/admission requirement**

1. A PhD candidate must have completed 18 years of education in any of the following subjects with a minimum CGPA of 3.0 out of 4.0 (semester system) or 60% (First Division) in annual system. The subjects include:
  - a. International Relations
  - b. Political Science
  - c. Defense and Strategic Studies
  - d. Defense and Diplomatic Studies
  - e. Peace and Conflict Studies
  - f. Government and Public policy
  - g. Area Studies
  - h. Development Studies
  - i. Political History
  - j. Media Studies
  - k. Pakistan Studies
2. NTS-GAT (Subject Test), or GRE (Subject Test) passed with minimum 60% marks or BU Admission Test with 70% Marks.
3. A statement of purpose of 2000 words shall also be submitted by the PhD candidate.
4. After submitting the required documents in the admission office of the campus, PhD candidate will appear before Departmental PhD Committee for interview and assessment of test, statement of purpose and relevant documents.



## Revision of Curriculum of PhD program in line with the HEC PhD Policy 2021

### Current Program Contents

1. Course Work (18 Credit hours)
2. Comprehensive Exam.
3. Dissertation (36 credit hours)
4. Final Defense.
5. The course work shall be completed with minimum CGPA of 3.0/4.0.

### Scheme of Study

| S. No | Course        | Semester        | Status     | Credit Hours |
|-------|---------------|-----------------|------------|--------------|
| 1     | Compulsory-I  | 1 <sup>st</sup> | Compulsory | 3            |
| 2     | Compulsory-II | 1 <sup>st</sup> | Compulsory | 3            |
| 3     | Optional I    | 1 <sup>st</sup> | Elective   | 3            |
| 4     | Optional II   | 2 <sup>nd</sup> | Elective   | 3            |
| 5     | Optional III  | 2 <sup>nd</sup> | Elective   | 3            |
| 6     | Optional IV   | 2 <sup>nd</sup> | Elective   | 3            |

### Revised Program Content suggested by DBOS held on 12<sup>th</sup> March 2021

1. Course Work (48 Credit hours for BS Admission, 24 Credit Hours for MS Admission)
2. Comprehensive Exam.
3. Dissertation (36 credit hours)
4. Final Defense.
5. The course work shall be completed with minimum CGPA of 3.0/4.0.



## List of courses

### Compulsory Courses

| S. No | Course        | Semester        | Status     | Credit Hours |
|-------|---------------|-----------------|------------|--------------|
| 1     | Compulsory-I  | 1 <sup>st</sup> | Compulsory | 3            |
| 2     | Compulsory-II | 1 <sup>st</sup> | Compulsory | 3            |
| 3     | Optional I    | 1 <sup>st</sup> | Elective   | 3            |
| 4     | Optional II   | 2 <sup>nd</sup> | Elective   | 3            |
| 5     | Optional III  | 2 <sup>nd</sup> | Elective   | 3            |
| 6     | Optional IV   | 2 <sup>nd</sup> | Elective   | 3            |

### Elective Courses

| Course Code | Course Title                                                      | Credit Hours |
|-------------|-------------------------------------------------------------------|--------------|
| IRS-721     | Theories of Comparative Politics                                  | 3            |
| IRS-722     | Seminar on Selected Contemporary Issues in International Politics | 3            |
| IRS-723     | South Asia in Global Politics                                     | 3            |
| IRS-724     | Middle East in Global Politics                                    | 3            |
| IRS-725     | South East Asia in Global Politics                                | 3            |
| IRS-726     | Central Asia in Global Politics                                   | 3            |
| IRS-727     | Latin America in Global Politics                                  | 3            |
| IRS-728     | Africa in Global Politics                                         | 3            |
| IRS-729     | Contemporary Muslim World                                         | 3            |
| IRS-730     | Comparative Study of Foreign Policies of Major Powers             | 3            |
| IRS-731     | Politics and Foreign Policy of USA                                | 3            |
| IRS-732     | Politics and Foreign Policy of China                              | 3            |
| IRS-733     | Politics and Foreign Policy of Russia                             | 3            |
| IRS-734     | International Law and Organization                                | 3            |
| IRS-735     | Regionalism: Theory and Practice                                  | 3            |
| IRS-736     | International Political Economy                                   | 3            |

|         |                                                                    |    |
|---------|--------------------------------------------------------------------|----|
| IRS-737 | Advanced Strategic Studies                                         | 3  |
| IRS-738 | Nuclear Studies                                                    | 3  |
| IRS-739 | Contemporary Conflict Resolution                                   | 3  |
| IRS-740 | Media and International Relations                                  | 3  |
| IRS-741 | Contemporary Critical Debates in International Relations           | 3  |
| IRS-742 | Issues in Pakistan's Foreign Policy: Seminar Course                | 3  |
| IRS-743 | International Environmental Politics                               | 3  |
| IRS-744 | Globalization, Modern State And Society                            | 3  |
| IRS-745 | Dynamics of Security in International Relations                    | 3  |
| IRS-746 | Dynamics of Modern Diplomacy                                       | 3  |
| IRS-747 | Climate Change, Sustainable Development and International Security | 3  |
| IRS-748 | Refugees and Forced Migrants in International Relations            | 3  |
| IRS-749 | Politics of the Indian Ocean                                       | 3  |
| IRS-703 | Advanced Course on Foreign Policy Analysis                         | 3  |
| IRS-701 | Advanced Course on Theories of International Relations             | 3  |
| IRS-702 | Advanced Course on Research Methodology                            | 3  |
| THS-900 | PhD Thesis                                                         | 36 |



## BAHRIA UNIVERSITY LAW SCHOOL (BULS)

### Programs offered:

- LLB
- LLM (General)
- LLM (International & Maritime Laws)
- PhD (Law)

### LLB (5 Years)

**Campus:** Islamabad

**Program Duration:** 5 Years (10 Semesters)

**Program Timing:** Morning

### Eligibility Criteria:

Candidates having passed Intermediates/A level or equivalent examination with 50% marks moreover cleared Law Admission Test (LAT) with 50% marks are eligible for admission however, those aspirants who have not appeared in LAT yet are also eligible to apply for admission but they have to submit result later with the required percentage, in other case admission will be cancelled. After successful completion of the course requirements, a student will be awarded LLB degree. This will be an academic as well as a professional degree in law and legal studies.

### Road Map

| Semester 1  |                           |              |
|-------------|---------------------------|--------------|
| Course Code | Course Description        | Credit Hours |
| LLB-111     | ENGLISH-I                 | 3            |
| LLB-112     | PAKISTAN STUDIES          | 2            |
| LLB-117     | INTRODUCTION TO SOCIOLOGY | 3            |

|         |                           |    |
|---------|---------------------------|----|
| LLB-114 | FUNDAMENTALS OF ECONOMICS | 3  |
| LLB-115 | INTRODUCTION TO LAW       | 3  |
| LLB-118 | SKILLS DEVELOPMENT        | 3  |
|         | TOTAL                     | 17 |

### Semester 2

| Course Code | Course Description             | Credit Hours |
|-------------|--------------------------------|--------------|
| LLB-121     | ENGLISH –II                    | 3            |
| LLB-122     | ISLAMIC STUDIES/ETHICS         | 2            |
| LLB-123     | PRICIPLES OF POLITICAL SCIENCE | 3            |
| LLB-124     | LEGAL SYSTEM OF PAKISTAN       | 3            |
| LLB-125     | HISTORY (SOUTH ASIA)           | 3            |
| LLB-127     | LAW OF TORTS-1                 | 3            |
|             | TOTAL                          | 17           |

### Semester 3

| Course Code | Course Description                  | Credit Hours |
|-------------|-------------------------------------|--------------|
| LLB-211     | ENGLISH-III                         | 3            |
| LLB-217     | INTRODUCTION TO LOGIC AND REASONING | 3            |
| LLB-213     | ISLAMIC JURISPRUDENCE-I             | 3            |
| LLB-219     | LAW OF TORTS-II                     | 3            |
| LLB-215     | LAW OF CONTRACT-I                   | 3            |
| LLB-218     | CONSTITUTIONAL LAW-I (UK)           | 3            |
|             | TOTAL                               | 18           |

### Semester 4

| Course Code | Course Description         | Credit Hours |
|-------------|----------------------------|--------------|
| LLB-222     | HUMAN RIGHTS LAW           | 3            |
| LLB-226     | CONSTITUTIONAL LAW-II (US) | 3            |

|         |                            |    |
|---------|----------------------------|----|
| LLB-224 | LAW OF CONTRACT-II         | 3  |
| LLB-225 | ISLAMIC JURISPRUDENCE-II   | 3  |
| LLB-227 | INTRODUCTION TO PSYCHOLOGY | 3  |
|         | TOTAL                      | 15 |

### Semester 5

| Course Code | Course Description               | Credit Hours |
|-------------|----------------------------------|--------------|
| LLB-311     | JURISPRUDENCE-I                  | 3            |
| LLB-316     | CONSTITUTIONAL LAW-III(PAKISTAN) | 3            |
| LLB-313     | ISLAMIC PERSONAL LAW-I           | 3            |
| LLB-314     | CRIMINAL LAW-I                   | 3            |
| LLB-317     | LAW OF PROPERTY                  | 3            |
|             | TOTAL                            | 15           |

### Semester 6

| Course Code | Course Description            | Credit Hours |
|-------------|-------------------------------|--------------|
| LLB-321     | JURISPRUDENCE-II              | 3            |
| LLB-326     | LAW OF BUSINESS ORGANIZATIONS | 3            |
| LLB-323     | ISLAMIC PERSONAL LAW-II       | 3            |
| LLB-324     | CRIMINAL LAW-II               | 3            |
| LLB-327     | LAND LAWS                     | 3            |
|             | TOTAL                         | 15           |

### Semester 7

| Course Code | Course Description                     | Credit Hours |
|-------------|----------------------------------------|--------------|
| LLB-411     | PUBLIC INTERNATIONAL LAW-I             | 3            |
| LLB-417     | CONSTITUTIONAL DEVELOPMENT IN PAKISTAN | 3            |
| LLB-413     | CIVIL PROCEDURE-I                      | 3            |
| LLB-414     | CRIMINAL PROCEDURE-I                   | 3            |

|         |                   |    |
|---------|-------------------|----|
| LLB-415 | LAW OF EVIDENCE-I | 3  |
| LLB-416 | LEGAL DRAFTING-I  | 3  |
|         | TOTAL             | 18 |

### Semester 8

| Couse Code | Course Description          | Credit Hours |
|------------|-----------------------------|--------------|
| LLB-421    | PUBLIC INTERNATIONAL LAW-II | 3            |
| LLB-422    | EQUITY AND SPECIFIC RELIEF  | 3            |
| LLB-423    | CIVIL PROCEDURE-II          | 3            |
| LLB-424    | CRIMINAL PROCEDURE-II       | 3            |
| LLB-425    | LAW OF EVIDENCE-II          | 3            |
| LLB-426    | LEGAL DRAFTING-II           | 3            |
|            | TOTAL                       | 18           |

### Semester 9

| Course Code | Course Description                 | Credit Hours |
|-------------|------------------------------------|--------------|
| LLB-516     | RESEARCH METHOD                    | 3            |
| LLB-517     | MINOR ACTS                         | 3            |
|             | ELECTIVE-I                         | 3            |
|             | ELECTIVE-II                        | 3            |
| LLB-515     | MOOT CASES AND PROFESSIONAL ETHICS | 3            |
|             | TOTAL                              | 15           |

### Semester 10

| Course Code | Course Description                                  | Credit Hours |
|-------------|-----------------------------------------------------|--------------|
| LLB-526     | ADMINISTRATIVE LAW                                  | 3            |
| LLB-527     | INTERPRETATION OF STATUTES AND LEGISLATIVE DRAFTING | 3            |
| LLB-523     | RESEARCH PROJECT                                    | 3            |

|                      | ELECTIVE-III                   | 3            |
|----------------------|--------------------------------|--------------|
|                      | ELECTIVE-IV                    | 3            |
|                      | TOTAL                          | 15           |
| <b>ELECTIVE LIST</b> |                                |              |
| Course Code          | Course Description             | Credit Hours |
| LLB 001              | Alternate Dispute Resolution   | 3            |
| LLB 002              | Banking Laws                   | 3            |
| LLB 003              | Conflict of Laws               | 3            |
| LLB 004              | Consumer Protection Laws       | 3            |
| LLB 005              | Custom and Tariff Laws         | 3            |
| LLB 006              | e-Commerce Law                 | 3            |
| LLB 007              | Election Laws                  | 3            |
| LLB 008              | Environmental Laws             | 3            |
| LLB 009              | Gender and Law                 | 3            |
| LLB 010              | Insurance laws                 | 3            |
| LLB 011              | Intellectual Property Laws     | 3            |
| LLB 012              | International Economic Law     | 3            |
| LLB 013              | International Humanitarian Law | 3            |
| LLB 014              | International Institutions     | 3            |
| LLB 015              | International Trade Law        | 3            |
| LLB 016              | Islamic Commercial Laws        | 3            |
| LLB 017              | Labour Laws                    | 3            |
| LLB 018              | Law and Development            | 3            |
| LLB 019              | Law and Energy                 | 3            |
| LLB 020              | Law and Society in Pakistan    | 3            |
| LLB 021              | Local and Special Laws         | 3            |
| LLB 022              | Media Laws                     | 3            |

|         |                             |   |
|---------|-----------------------------|---|
| LLB 023 | Medical and Forensic Law    | 3 |
| LLB 024 | Mergers and Acquisitions    | 3 |
| LLB 025 | Islamic Legal Maxims        | 3 |
| LLB 026 | Public Interest Litigation  | 3 |
| LLB 027 | Securities Regulation       | 3 |
| LLB 028 | Shipping and Admiralty Laws | 3 |
| LLB 029 | Taxation Laws               | 3 |
| LLB 030 | Telecommunication Laws      | 3 |
| LLB 032 | Competition Law             | 3 |
| LLB 033 | Parliamentary Studies       | 3 |
| LLB 034 | Air and Space Law           | 3 |
| LLB 035 | Cyber Security Law & Policy | 3 |

## LLM - General (2 Years)

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

LL.B degree from Pakistan Bar Council (PBC)/ HEC recognized university/institute with minimum CGPA of 2.0/4.00 or 50% marks where CGPA is not given.

## Road Map

|                    | SUBJECTS | CREDITS |
|--------------------|----------|---------|
| Compulsory Course  | 1        | 3       |
| Optional           | 7        | 21      |
| Thesis-I/Thesis-II | 1        | 6       |
| TOTAL              | 9        | 30      |

| <b>SEMESTER-1</b>                        |                                |                    |
|------------------------------------------|--------------------------------|--------------------|
| <b>COURSE CODE</b>                       | <b>COURSE TITLE</b>            | <b>CREDITS</b>     |
| LLM 700                                  | RESEARCH METHODOLOGY           | 3                  |
| LLM-XXX                                  | Elective-I                     | 3                  |
| LLM-XXX                                  | Elective-II                    | 3                  |
| LLM-XXX                                  | Elective-III                   | 3                  |
|                                          | Total                          | 12                 |
| <b>SEMESTER-2</b>                        |                                |                    |
| LLM-XXX                                  | Elective-IV                    | 3                  |
| LLM-XXX                                  | Elective-V                     | 3                  |
| LLM-XXX                                  | Elective-VI                    | 3                  |
| LLM-XXX                                  | Elective-VII                   | 3                  |
|                                          | Total                          | 12                 |
| <b>SEMESTER-3</b>                        |                                |                    |
| LLM-725                                  | THESIS-I                       | 3                  |
| SEMESTER-4                               |                                |                    |
| LLM-725                                  | THESIS-II                      | 3                  |
| <b>LIST OF APPROVED ELECTIVE COURSES</b> |                                |                    |
| <b>COURSE CODE</b>                       | <b>SUBJECT TITLE</b>           | <b>CREDIT HOUR</b> |
| LLM-701                                  | ADMINISTRATIVE LAW             | 3                  |
| LLM-702                                  | ALTERNATE DISPUTE RESOLUTION   | 3                  |
| LLM-703                                  | BANKING LAW                    | 3                  |
| LLM-704                                  | COMMERCIAL/ BUSINESS LAW       | 3                  |
| LLM-705                                  | COMPANY/ CORPORATE LAW         | 3                  |
| LLM-706                                  | COMPARATIVE CONSTITUTIONAL LAW | 3                  |
| LLM-707                                  | COMPARATIVE ENVIRONMENTAL LAW  | 3                  |
| LLM-708                                  | COMPARATIVE HUMAN RIGHTS LAW   | 3                  |

|         |                                                                  |   |
|---------|------------------------------------------------------------------|---|
| LLM-709 | COMPARATIVE STUDY OF ISLAMIC AND WETERN JURISPRUDENCE            | 3 |
| LLM-710 | CONSTITUTIONAL LAW OF PAKISTAN                                   | 3 |
| LLM-711 | CRIMINOLOGY                                                      | 3 |
| LLM-712 | INTELLECTUAL PROPERTY LAWS                                       | 3 |
| LLM-713 | INTERNATIONAL ECONOMIC LAW                                       | 3 |
| LLM-714 | INTERNATIONAL TRADE LAW                                          | 3 |
| LLM-715 | ISLAMIC LAW                                                      | 3 |
| LLM-716 | LABOUR LAW                                                       | 3 |
| LLM-717 | LAW AND POLITICS                                                 | 3 |
| LLM-718 | LAW AND SOCIETY IN SOUTH ASIA                                    | 3 |
| LLM-719 | LAW OF EVIDENCE                                                  | 3 |
| LLM-720 | LAW OF INTERNATIONAL INSTITUTIONS                                | 3 |
| LLM-721 | LAW OF TAXATION                                                  | 3 |
| LLM-722 | LEGAL HISTORY OF PAKISTAN AND INDIA                              | 3 |
| LLM-723 | SHIPPING LAW                                                     | 3 |
| LLM-724 | WESTERN JURISPRUDENCE AND LEGAL THEORY                           | 3 |
| LLM-726 | CYBER SPACE LAW: INTERNET JURISDICTION AND DISPUTE RESOLUTION    | 3 |
| LLM-727 | CYBERCRIME: INTERNATIONAL COOPERATION AND DIGITAL INVESTIGATIONS | 3 |
| LLM-728 | E-COMMERCE LAWS                                                  | 3 |
| LLM-729 | MEDIA LAWS                                                       | 3 |
| LLM-730 | GLOBAL SECURITY & HUMAN RIGHTS LAW                               | 3 |
| LLM-731 | INTERNATIONAL REFUGEE LAW                                        | 3 |
| LLM-732 | INTERNATIONAL INVESTMENT LAW                                     | 3 |
| LLM-733 | COMPARATIVE CRIMINAL JUSTICE                                     | 3 |
| LLM-734 | INTERNATIONAL HUMANITARIAN LAW                                   | 3 |
| LLM-735 | IMMIGRATION LAW                                                  | 3 |



|         |                                        |   |
|---------|----------------------------------------|---|
| LLM-736 | LAW OF TREATISE                        | 3 |
| LLM-737 | ISLAMIC LAW OF WAR AND PEACE           | 3 |
| LLM-738 | INTERNATIONAL CRIMINAL LAW             | 3 |
| LLM-739 | ENERGY AND CLIMATE CHANGE LAW          | 3 |
| LLM-741 | INTERNATIONAL MARITIME LAW             | 3 |
| LLM-742 | CARRIAGE OF GOODS BY SEA               | 3 |
| LLM 743 | INTERNATIONAL COMMERCIAL ARBITRATION   | 3 |
| LLM 744 | COMMERCIAL CONFLICT OF LAWS            | 3 |
| LLM 745 | SHIPPING CONTRACTS                     | 3 |
| LLM 746 | MARINE INSURANCE                       | 3 |
| LLM 747 | LAW OF MARINE ENVIRONMENT              | 3 |
| LLM 748 | CRIMES AT SEA                          | 3 |
| LLM 749 | ADMIRALTY AND JURISDICTION             | 3 |
| LLM 752 | INTERNATIONAL LAW OF USE OF FORCE      | 3 |
| LLM 753 | INTERNATIONAL ENVIRONMENTAL LAW        | 3 |
| LLM 754 | ADVANCED COMPETITION LAW               | 3 |
| LLM 755 | ADVANCED SECURITIES LAW AND REGULATION | 3 |
| LLM 756 | ISLAMIC FAMILY LAWS                    | 3 |
| LLM 757 | BUSINESS ETHICS AND HUMAN RIGHTS       | 3 |

## LLM - International & Maritime Laws (2 Years)

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

LL.B degree from Pakistan Bar Council (PBC)/ HEC recognized university/institute with minimum CGPA of 2.0/4.00 or 50% marks where CGPA is not given.

## Road Map

|                     | SUBJECTS    |                | CREDITS |
|---------------------|-------------|----------------|---------|
| Compulsory Course   | 4           |                | 12      |
| Elective/Compulsory | 4           |                | 12      |
| Thesis-I/Thesis-II  | 1           |                | 6       |
| TOTAL               | 9           |                | 30      |
|                     | SEMESTER-1  |                |         |
|                     | COURSE CODE | COURSE TITLE   | CREDITS |
| 1                   | LLM-XXX     | Compulsory-I   | 3       |
| 2                   | LLM-XXX     | Compulsory-II  | 3       |
| 3                   | LLM-XXX     | Compulsory-III | 3       |
| 4                   | LLM-XXX     | Compulsory-IV  | 3       |
|                     | SEMESTER-2  |                |         |
| 5                   | LLM-XXX     | Elective-I     | 3       |
| 6                   | LLM-XXX     | Elective-II    | 3       |
| 7                   | LLM-XXX     | Elective-III   | 3       |
| 8                   | LLM-XXX     | Elective-IV    | 3       |
|                     | SEMESTER-3  |                |         |
| 9                   | LLM-725     | THESIS-I       | 3       |
|                     | SEMESTER-4  |                |         |
| 10                  | LLM-725     | THESIS-II      | 3       |



| LIST OF APPROVED COMPULSORY COURSES |             |                                                       |             |
|-------------------------------------|-------------|-------------------------------------------------------|-------------|
| Sr.No                               | Course Code | Subject Title                                         | Credit Hour |
| 1                                   | LLM-700     | RESEARCH METHODOLOGY                                  | 3           |
| 2                                   | LLM-714     | INTERNATIONAL TRADE LAW                               | 3           |
| 3                                   | LLM-741     | INTERNATIONAL MARITIME LAW                            | 3           |
| 4                                   | LLM-742     | CARRIAGE OF GOODS BY SEA                              | 3           |
| LIST OF APPROVED ELECTIVE COURSES   |             |                                                       |             |
| Sr.No                               | Course Code | Subject Title                                         | Credit Hour |
| 1                                   | LLM-701     | ADMINISTRATIVE LAW                                    | 3           |
| 2                                   | LLM-702     | ALTERNATE DISPUTE RESOLUTION                          | 3           |
| 3                                   | LLM-703     | BANKING BLAW                                          | 3           |
| 4                                   | LLM-704     | COMMERCIAL/ BUSINESS LAW                              | 3           |
| 5                                   | LLM-705     | COMPANY/ CORPORATE LAW                                | 3           |
| 6                                   | LLM-706     | COMPARATIVE CONSTITUTIONAL LAW                        | 3           |
| 7                                   | LLM-707     | COMPARATIVE ENVIRONMENTAL LAW                         | 3           |
| 8                                   | LLM-708     | COMPARATIVE HUMAN RIGHTS LAW                          | 3           |
| 9                                   | LLM-709     | COMPARATIVE STUDY OF ISLAMIC AND WETERN JURISPRUDENCE | 3           |
| 10                                  | LLM-710     | CONSTITUTIONAL LAW OF PAKISTAN                        | 3           |
| 11                                  | LLM-711     | CRIMINOLOGY                                           | 3           |
| 12                                  | LLM-712     | INTELLECTUAL PROPERTY LAWS                            | 3           |
| 13                                  | LLM-713     | INTERNATIONAL ECONOMIC LAW                            | 3           |



|    |         |                                                                  |   |
|----|---------|------------------------------------------------------------------|---|
| 14 | LLM-715 | ISLAMIC LAW                                                      | 3 |
| 15 | LLM-716 | LABOUR LAW                                                       | 3 |
| 16 | LLM-717 | LAW AND POLITICS                                                 | 3 |
| 17 | LLM-718 | LAW AND SOCIETY IN SOUTH ASIA                                    | 3 |
| 18 | LLM-719 | LAW OF EVIDENCE                                                  | 3 |
| 19 | LLM-720 | LAW OF INTERNATIONAL INSTITUTIONS                                | 3 |
| 20 | LLM-721 | LAW OF TAXATION                                                  | 3 |
| 21 | LLM-722 | LEGAL HISTORY OF PAKISTAN AND INDIA                              | 3 |
| 22 | LLM-723 | SHIPPING LAW                                                     | 3 |
| 23 | LLM-724 | WESTERN JURISPRUDENCE AND LEGAL THEORY                           | 3 |
| 24 | LLM-726 | CYBER SPACE LAW: INTERNET JURISDICTION AND DISPUTE RESOLUTION    | 3 |
| 25 | LLM-727 | CYBERCRIME: INTERNATIONAL COOPERATION AND DIGITAL INVESTIGATIONS | 3 |
| 26 | LLM-728 | E-COMMERCE LAWS                                                  | 3 |
| 27 | LLM-729 | MEDIA LAWS                                                       | 3 |
| 28 | LLM-730 | GLOBAL SECURITY & HUMAN RIGHTS LAW                               | 3 |
| 29 | LLM-731 | INTERNATIONAL REFUGEE LAW                                        | 3 |
| 30 | LLM-732 | INTERNATIONAL INVESTMENT LAW                                     | 3 |
| 31 | LLM-733 | COMPARATIVE CRIMINAL JUSTICE                                     | 3 |
| 32 | LLM-734 | INTERNATIONAL HUMANITARIAN LAW                                   | 3 |
| 33 | LLM-735 | IMMIGRATION LAW                                                  | 3 |
| 34 | LLM-736 | LAW OF TREATISE                                                  | 3 |



|    |         |                                        |   |
|----|---------|----------------------------------------|---|
| 35 | LLM-737 | ISLAMIC LAW OF WAR AND PEACE           | 3 |
| 36 | LLM-738 | INTERNATIONAL CRIMINAL LAW             | 3 |
| 37 | LLM-739 | ENERGY AND CLIMATE CHANGE LAW          | 3 |
| 38 | LLM 743 | INTERNATIONAL COMMERCIAL ARBITRATION   | 3 |
| 39 | LLM 744 | COMMERCIAL CONFLICT OF LAWS            | 3 |
| 40 | LLM 745 | SHIPPING CONTRACTS                     | 3 |
| 41 | LLM 746 | MARINE INSURANCE                       | 3 |
| 42 | LLM 747 | LAW OF MARINE ENVIRONMENT              | 3 |
| 43 | LLM 748 | CRIMES AT SEA                          | 3 |
| 44 | LLM 749 | ADMIRALTY AND JURISDICTION             | 3 |
| 45 | LLM 752 | INTERNATIONAL LAW OF USE OF FORCE      | 3 |
| 46 | LLM 753 | INTERNATIONAL ENVIRONMENTAL LAW        | 3 |
| 47 | LLM 754 | ADVANCED COMPETITION LAW               | 3 |
| 48 | LLM 755 | ADVANCED SECURITIES LAW AND REGULATION | 3 |
| 49 | LLM 756 | ISLAMIC FAMILY LAWS                    | 3 |
| 50 | LLM 757 | BUSINESS ETHICS AND HUMAN RIGHTS       | 3 |

## PhD Law (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

- LL.M degree from an HEC recognized university with a minimum CGPA of 3.0/4.0 (Semester System) or 60% marks (Annual System).
- Pre-qualification of LL.B is also mandatory requirement.
- NTS-GAT (Subject) or GRE (Subject) Test passed with minimum 60% Marks or BU Admission Test (70% passing marks).
- Initial Research Proposal/Statement of Purpose is required at the time of PhD admission.

### Road Map

| Semester-1                                                          |                                              |              |
|---------------------------------------------------------------------|----------------------------------------------|--------------|
| Course Title                                                        | Course Title                                 | Credit Hours |
| LLP-801                                                             | Advanced Research Methods in Law(Compulsory) | 3            |
| LLP-XYZ                                                             | Elective 1                                   | 3            |
| LLP-XYZ                                                             | Elective 2                                   | 3            |
| Semester-2                                                          |                                              |              |
| Course Title                                                        | Course Title                                 | Credit Hours |
| LLP-XYZ                                                             | Elective 3                                   | 3            |
| LLP-XYZ                                                             | Elective 4                                   | 3            |
| LLP-XYZ                                                             | Elective 5                                   | 3            |
| Course work of 18 credit hours will be complete after 2nd semester. |                                              |              |

| Semester-3               |                                                                     | Credit Hours |
|--------------------------|---------------------------------------------------------------------|--------------|
| Comprehensive Exam       |                                                                     | 9            |
| Approval Thesis Proposal |                                                                     |              |
| Semester-4               |                                                                     |              |
| Research Work            |                                                                     | 9            |
| Semester-5               |                                                                     |              |
| Research Work            |                                                                     | 9            |
| Semester-6               |                                                                     |              |
| Research Work            |                                                                     | 9            |
| Thesis                   |                                                                     |              |
| Course Code              | Course Title                                                        | Credit Hours |
| LLP-812                  | Thesis                                                              | 36           |
| Course Code              | Course Title                                                        | Credit Hours |
| LLP-802                  | Legal History of the Subcontinent                                   | 3            |
| LLP-803                  | Comparative Legal Theory/Philosophy                                 | 3            |
| LLP-804                  | Law and Governance: Institutional Framework                         | 3            |
| LLP-805                  | Comparative Legal System and Procedure                              | 3            |
| LLP-806                  | Transformation of Sharia into Law: The Modern Application of Sharia | 3            |
| LLP-808                  | Technological Advancement in Law                                    | 3            |
| LLP-809                  | Law and Regional Integration: With Focus On CPEC                    | 3            |
| LLP-810                  | Comparative Criminal Justice System                                 | 3            |
| LLP-811                  | Comparative Human Rights Law                                        | 3            |
| LLM-701                  | ADMINISTRATIVE LAW                                                  | 3            |
| LLM-702                  | ALTERNATE DISPUTE RESOLUTION                                        | 3            |
| LLM-703                  | BANKING LAW                                                         | 3            |



|         |                                                                  |   |
|---------|------------------------------------------------------------------|---|
| LLM-704 | COMMERCIAL/ BUSINESS LAW                                         | 3 |
| LLM-705 | COMPANY/ CORPORATE LAW                                           | 3 |
| LLM-706 | COMPARATIVE CONSTITUTIONAL LAW                                   | 3 |
| LLM-707 | COMPARATIVE ENVIRONMENTAL LAW                                    | 3 |
| LLM-708 | COMPARATIVE HUMAN RIGHTS LAW                                     | 3 |
| LLM-709 | COMPARATIVE STUDY OF ISLAMIC AND WETERN JURISPRUDENCE            | 3 |
| LLM-710 | CONSTITUTIONAL LAW OF PAKISTAN                                   | 3 |
| LLM-711 | CRIMINOLOGY                                                      | 3 |
| LLM-712 | INTELLECTUAL PROPERTY LAWS                                       | 3 |
| LLM-713 | INTERNATIONAL ECONOMIC LAW                                       | 3 |
| LLM-714 | INTERNATIONAL TRADE LAW                                          | 3 |
| LLM-715 | ISLAMIC LAW                                                      | 3 |
| LLM-716 | LABOUR LAW                                                       | 3 |
| LLM-717 | LAW AND POLITICS                                                 | 3 |
| LLM-718 | LAW AND SOCIETY IN SOUTH ASIA                                    | 3 |
| LLM-719 | LAW OF EVIDENCE                                                  | 3 |
| LLM-720 | LAW OF INTERNATIONAL INSTITUTIONS                                | 3 |
| LLM-721 | LAW OF TAXATION                                                  | 3 |
| LLM-722 | LEGAL HISTORY OF PAKISTAN AND INDIA                              | 3 |
| LLM-723 | SHIPPING LAW                                                     | 3 |
| LLM-724 | WESTERN JURISPRUDENCE AND LEGAL THEORY                           | 3 |
| LLM-726 | CYBER SPACE LAW: INTERNET JURISDICTION AND DISPUTE RESOLUTION    | 3 |
| LLM-727 | CYBERCRIME: INTERNATIONAL COOPERATION AND DIGITAL INVESTIGATIONS | 3 |
| LLM-728 | E-COMMERCE LAWS                                                  | 3 |
| LLM-729 | MEDIA LAWS                                                       | 3 |
| LLM-730 | GLOBAL SECURITY & HUMAN RIGHTS LAW                               | 3 |



|         |                                        |   |
|---------|----------------------------------------|---|
| LLM-731 | INTERNATIONAL REFUGEE LAW              | 3 |
| LLM-732 | INTERNATIONAL INVESTMENT LAW           | 3 |
| LLM-733 | COMPARATIVE CRIMINAL JUSTICE           | 3 |
| LLM-734 | INTERNATIONAL HUMANITARIAN LAW         | 3 |
| LLM-735 | IMMIGRATION LAW                        | 3 |
| LLM-736 | LAW OF TREATISE                        | 3 |
| LLM-737 | ISLAMIC LAW OF WAR AND PEACE           | 3 |
| LLM-738 | INTERNATIONAL CRIMINAL LAW             | 3 |
| LLM-739 | ENERGY AND CLIMATE CHANGE LAW          | 3 |
| LLM-741 | INTERNATIONAL MARITIME LAW             | 3 |
| LLM-742 | CARRIAGE OF GOODS BY SEA               | 3 |
| LLM 743 | INTERNATIONAL COMMERCIAL ARBITRATION   | 3 |
| LLM 744 | COMMERCIAL CONFLICT OF LAWS            | 3 |
| LLM 745 | SHIPPING CONTRACTS                     | 3 |
| LLM 746 | MARINE INSURANCE                       | 3 |
| LLM 747 | LAW OF MARINE ENVIRONMENT              | 3 |
| LLM 748 | CRIMES AT SEA                          | 3 |
| LLM 749 | ADMIRALTY AND JURISDICTION             | 3 |
| LLM 752 | INTERNATIONAL LAW OF USE OF FORCE      | 3 |
| LLM 753 | INTERNATIONAL ENVIRONMENTAL LAW        | 3 |
| LLM 754 | ADVANCED COMPETITION LAW               | 3 |
| LLM 755 | ADVANCED SECURITIES LAW AND REGULATION | 3 |
| LLM 756 | ISLAMIC FAMILY LAWS                    | 3 |
| LLM 757 | BUSINESS ETHICS AND HUMAN RIGHTS       | 3 |

## DEPARTMENT OF MEDIA STUDIES

### Programs offered:

- BS (Media Studies)
- BS (TV Broadcasting & Digital Media)
- MS (Media Studies)
- PhD (Media Studies)

### BS Media Studies (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

### Eligibility Criteria:

All candidates who have passed intermediate examination or its equivalent with a minimum of 50% marks in any discipline can apply for admission to BS Media studies.

### Road Map

#### Semester 1

| S.# | Course Code | Course Title                           | Credit Hours |
|-----|-------------|----------------------------------------|--------------|
| 1   | ENG 101     | Functional English                     | 03           |
| 2   | MED 109     | Computer Skills for Mass Communication | 03           |
| 3   | MED 107     | Introduction to Mass Communication     | 03           |
| 4   | ENV 105     | Introduction to Environmental Sciences | 03           |
| 5   | PAK 105     | Pak Studies                            | 03           |
| 6   | MED 110     | Photography                            | 03           |



## Semester 2

| S.# | Course Code | Course Title                    | Credit Hours |
|-----|-------------|---------------------------------|--------------|
| 1   | ENG 133     | Writing & Presentation Skills   | 03           |
| 2   | HSS 102     | Introduction to Philosophy      | 03           |
| 3   | MED 211     | Introduction to Broadcast Media | 03           |
| 4   | MAT 105     | Mathematics                     | 03           |
| 5   | ISL 100     | Islamic Studies / Ethics        | 03           |
| 6   |             | Elective*                       | 03           |

## Semester 3

| S.# | Course Code | Course Title                            | Credit Hours |
|-----|-------------|-----------------------------------------|--------------|
| 1   | HSS 330     | Physical Education & Sports             | 02           |
| 2   | HSS 331     | Fundamentals of International Relations | 02           |
| 3   | HSS 112     | Introduction to Political Science       | 03           |
| 4   | MAT 205     | Statistics                              | 03           |
| 5   | MED 210     | News Writing and Reporting              | 03           |
| 6   |             | Elective*                               | 03           |

## Semester 4

| S.# | Course Code | Course Title                  | Credit Hours |
|-----|-------------|-------------------------------|--------------|
| 1   | HSS 423     | Entrepreneurship              | 02           |
| 2   | CCE 310     | Civics & Community Engagement | 02           |
| 3   | HSS 334     | Fundamentals of Sociology     | 03           |
| 4   | HSS 340     | Introduction to Psychology    | 03           |
| 5   | MED 208     | Introduction to Digital Media | 03           |
| 6   |             | Elective*                     | 03           |

\*Students can take mandatory 6 to 8 weeks internship preferably in summers any time after 4th semester onwards

## Semester 5

| S.# | Course Code | Course Title                                     | Credit Hours |
|-----|-------------|--------------------------------------------------|--------------|
| 1   | MED 303     | Mass Communication Theories                      | 03           |
| 2   | MED 305     | Script Writing and Editing                       | 03           |
| 3   | MED 206     | Current Affairs                                  | 03           |
| 4   | MED 204     | Introduction to Advertising and Public Relations | 03           |
| 5   | MED 209     | Journalistic Language                            | 03           |
| 6   |             | Elective*                                        | 03           |

## Semester 6

| S.# | Course Code | Course Title          | Credit Hours |
|-----|-------------|-----------------------|--------------|
| 1   | MED 304     | Research Methods      | 03           |
| 2   | MED 306     | Photo Journalism      | 03           |
| 3   | MED 401     | Online Journalism     | 03           |
| 4   | MED 403     | Media Laws and Ethics | 03           |
| 5   | MED 304     | Research Methods      | 03           |
| 6   |             | Elective*             | 03           |

## Semester 7

| S.# | Course Code | Course Title                        | Credit Hours |
|-----|-------------|-------------------------------------|--------------|
| 1   | HSS 401     | Statistical Analysis of Social Data | 03           |
| 2   | MED 448     | Intercultural Communication         | 03           |
| 3   |             | Elective*                           | 03           |
| 4   |             | Elective*                           | 03           |
| 5   |             | Elective*                           | 03           |

## Semester 8

| S.# | Course Code | Course Title                      | Credit Hours |
|-----|-------------|-----------------------------------|--------------|
| 1   | MED 402     | Capstone Project                  | 03           |
| 2   | MED 404     | Development Support Communication | 03           |
| 3   | MED 446     | Digital Public Relations          | 03           |
| 4   |             | Elective*                         | 03           |
| 5   |             | Elective*                         | 03           |

### List of Elective Courses

|    | Course Code | Course Title                          | Credit Hours |
|----|-------------|---------------------------------------|--------------|
| 1  | MED 308     | Video Editing                         | 03           |
| 2  | MED 309     | World Cinema                          | 03           |
| 3  | MED 311     | 2D Animation                          | 03           |
| 4  | MED 312     | Principles of Public Relations        | 03           |
| 5  | MED 313     | Musicology                            | 03           |
| 6  | MED 314     | Media, Culture and Society            | 03           |
| 7  | MED 315     | Sound Design                          | 03           |
| 8  | MED 113     | Intro to Film Studies                 | 03           |
| 9  | MED 111     | Media and Society                     | 03           |
| 10 | MTB 318     | Film Analysis                         | 03           |
| 11 | MTB 319     | Introduction to Theatre               | 03           |
| 12 | MTB 420     | Media Entrepreneurship                | 03           |
| 13 | MED 302     | Feature, Column and Editorial Writing | 03           |
| 14 | MED 307     | Elements of Advertising               | 03           |
| 15 | MED 301     | Sub-Editing and Page Designing        | 03           |
| 16 | MED 440     | Copy and Layout Designing             | 03           |
| 17 | MED 202     | Functional Urdu                       | 03           |

|    |         |                                |    |
|----|---------|--------------------------------|----|
| 18 | MED 437 | 2D / 3D Animation              | 03 |
| 19 | MED 444 | Persuasive Writing             | 03 |
| 20 | MED 445 | PR Campaign Designing          | 03 |
| 21 | MED 447 | International Public Relations | 03 |
| 22 | MED 417 | Advanced cinematography        | 03 |
| 23 | MED 418 | Art Direction                  | 03 |

### **BS Media Studies Minor (12 Credit Hours)**

|         |                                  |
|---------|----------------------------------|
| Minor 1 | Electronic Media                 |
| Minor 2 | Animation                        |
| Minor 3 | Advertising and Public Relations |
| Minor 4 | Media Management                 |

### **1. Electronic Media – Electives**

| <b>S#</b> | <b>Code</b> | <b>Title</b>                    | <b>CHs</b> |
|-----------|-------------|---------------------------------|------------|
| 1         | MED 415     | Television Journalism           | 03         |
| 2         | MED 416     | News writing and production     | 03         |
| 3         | MED 417     | Advanced cinematography         | 03         |
| 4         | MED 418     | Art Direction                   | 03         |
| 5         | MED 419     | Documentary Production          | 03         |
| 6         | MED 420     | Film Direction                  | 03         |
| 7         | MED 421     | Motion graphics and compositing | 03         |
| 8         | MED 422     | Music video production          | 03         |
| 9         | MED 424     | Storyboarding                   | 03         |



|    |         |                                                 |    |
|----|---------|-------------------------------------------------|----|
| 10 | MED 409 | Data Journalism                                 | 03 |
| 11 | MED 410 | Long Form Journalism                            | 03 |
| 12 | MED 411 | Magazine Production/Magazine Program Production | 03 |
| 13 | MED 412 | Multimedia Journalism                           | 03 |
| 14 | MED 414 | Peace Journalism                                | 03 |
| 15 | MED 408 | Community Journalism                            | 03 |
| 16 | MED 413 | Newspaper Production                            | 03 |
| 17 | MED 423 | Product Development                             | 03 |

## 2. Animation (ANM)

| S# | Code    | Title                             | CHs |
|----|---------|-----------------------------------|-----|
| 1  | MED 449 | Character Modeling                | 03  |
| 2  | MED 450 | 3D Modeling                       | 03  |
| 3  | MED 425 | 3d Lighting/ Texturing/ Rendering | 03  |
| 4  | MED 426 | Character Animation               | 03  |
| 5  | MED 421 | Motion Graphic/ Compositing       | 03  |
| 6  | MED 436 | Advanced Free Hand Drawing        | 03  |
| 7  | MED 452 | Digital Illustrations             | 03  |
| 8  | MED 453 | 3D Animation                      | 03  |
| 9  | MED 454 | 3D Character Animation            | 03  |
| 10 | MED 429 | Virtual Reality                   | 03  |

## 3. Advertising and Public Relations – Minor Courses

| S# | Code    | Title                   | CHs |
|----|---------|-------------------------|-----|
| 1  | MED 430 | Media Planning & Buying | 03  |
| 2  | MED 431 | Campaign Designing      | 03  |
| 3  | MED 432 | Market Research         | 03  |
| 4  | MED 433 | TVC Production          | 03  |

|    |         |                                     |    |
|----|---------|-------------------------------------|----|
| 5  | MED 429 | Copy Writing                        | 03 |
| 6  | MED 435 | Advertising Strategy & Planning     | 03 |
| 7  | MED 437 | 2D/3D Animation                     | 03 |
| 8  | MED 438 | Brand Management                    | 03 |
| 9  | ADM 439 | Digital Advertising                 | 03 |
| 10 | MED 442 | Crisis Communication and Management | 03 |
| 11 | MED 442 | Event Management                    | 03 |
| 12 | MED 443 | Media Management & Relations        | 03 |

#### 4. Media Management (MMM)

| S# | Code    | Title                              | CHs |
|----|---------|------------------------------------|-----|
| 1  | MED 455 | Media Management and Marketing     | 03  |
| 2  | MED 423 | Product Development                | 03  |
| 3  | MED 457 | Integrated Marketing Communication | 03  |
| 4  | HRM 353 | Human Resource Management          | 03  |
| 5  | ENG 243 | Business Communication Skills      | 03  |
|    |         |                                    | 03  |

## BS TV Broadcasting & Digital Media (4 Years)

**Campus:** Islamabad

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

### Eligibility Criteria:

All candidates who have passed intermediate examination or its equivalent with a minimum of 50% marks in any discipline can apply for admission to BS TV Broadcasting & Digital Media.

## ROAD MAP

### Semester One

| S# | Course Code | Course Title               | CH |
|----|-------------|----------------------------|----|
| 01 | ENG 101     | Functional English         | 03 |
| 02 | MTB 101     | Computer Skills for Media  | 03 |
| 03 | MTB 109     | Introduction to Television | 03 |
| 04 | MED 209     | Journalistic Language      | 03 |
| 05 | PAK 105     | Pakistan Studies           | 02 |
| 06 |             | Elective*                  | 03 |

### Semester Two

| S# | Course Code | Course Title                                     | CH |
|----|-------------|--------------------------------------------------|----|
| 01 | ENG 113     | Writing & Presentation Skills                    | 03 |
| 02 | MED 208     | Introduction to Digital Media                    | 03 |
| 03 | MTB 108     | News Writing & Reporting in Broadcast Journalism | 03 |
| 04 | MAT 205     | Statistics                                       | 03 |
| 05 | ISL 101     | Islamic Studies / (Ethics)                       | 02 |
| 06 |             | Elective*                                        | 03 |

### Semester Three

| S# | Course Code | Course Title                       | CH |
|----|-------------|------------------------------------|----|
| 01 | MED 403     | Media Laws and Ethics              | 03 |
| 02 | MED 113     | Introduction to Film Studies (New) | 03 |
| 03 | MED 206     | Current Affairs                    | 03 |
| 04 | MED 448     | Intercultural Communication        | 03 |
| 05 | ENG 135     | Communication Skills               | 03 |
| 06 |             | Elective*                          | 03 |

### Semester Four

| S# | Course Code | Course Title                              | CH |
|----|-------------|-------------------------------------------|----|
| 01 | MTB 215     | Digital Marketing & Public Relations (PR) | 03 |
| 02 | MED 303     | Mass Communications Theories              | 03 |
| 03 | MTB 317     | Videography                               | 03 |
| 04 | MED 309     | World Cinema                              | 03 |
| 05 | MTB 214     | Cyber Psychology                          | 03 |
| 06 |             | Elective*                                 | 03 |

### Semester Five

| S# | Course Code | Course Title                             | CH |
|----|-------------|------------------------------------------|----|
| 01 | MTB 320     | Screenplay Writing                       | 03 |
| 02 | MTB 313     | Graphic Designing & Visual Communication | 03 |
| 03 | MTB 319     | Introduction to Theater                  | 03 |
| 04 | MTB 455     | Media Management and Marketing           | 03 |
| 05 | MED 409     | Data Journalism                          | 03 |
| 06 |             | Elective*                                | 03 |

## Semester Six

| S# | Course Code | Course Title                                   | CH |
|----|-------------|------------------------------------------------|----|
| 01 | MTB 314     | TV Program Production                          | 03 |
| 02 | MTB 319     | Digital Media Literacy (from Elective to core) | 03 |
| 03 | MTB 309     | TV News Production & Presentation              | 03 |
| 04 | MTB 316     | Web Designing                                  | 03 |
| 05 | MTB 312     | Set Designing                                  | 03 |
| 06 |             | Elective                                       | 03 |

## Semester Seven

| S# | Course Code | Course Title                             | CH |
|----|-------------|------------------------------------------|----|
| 01 | MTB 403     | Drama Production (from Elective to Core) | 03 |
| 02 | MTB 418     | Mass Media Research Methods              | 03 |
| 03 | MTB 402     | Documentary Production                   | 03 |
| 04 | MTB 415     | Digital Media Analytics                  | 03 |
| 05 |             | Elective*                                | 03 |

## Semester Eight

| S# | Course code | Course Title                     | CH |
|----|-------------|----------------------------------|----|
| 01 | MTB 421     | Podcast Development & Production | 03 |
| 02 | MTB 416     | Digital Storytelling             | 03 |
| 03 | MTB 409     | Research Project / Final Project | 03 |
| 04 | MTB 419     | Elective*                        | 03 |

**Total Credit Hours 133 + 02 Internship =135**

\*Elective course will be offered from the Electives List by the department conditional to the availability of resource and expertise

### List of Elective Courses

| S# | Course Code | Course Title           | CH |
|----|-------------|------------------------|----|
| 1  | MTB 104     | Mass Media in Pakistan | 03 |



| S# | Course Code | Course Title                             | CH |
|----|-------------|------------------------------------------|----|
| 2  | MED 401     | Online Journalism                        | 03 |
| 3  | MED 404     | Development Support Communication        | 03 |
| 4  | MED 207     | Social Psychology                        | 03 |
| 5  | MTB 208     | Comparing Media Systems                  | 03 |
| 6  | MTB 205     | International Media Regulations          | 03 |
| 7  | MTB 204     | Writing for Internet                     | 03 |
| 8  | MED 306     | Photojournalism                          | 03 |
| 9  | MED 437     | 2D/3D Animation                          | 03 |
| 10 | MTB 310     | Television Commercial (TVC)              | 03 |
| 11 | MTB 405     | Television Program Analysis (Seminar)    | 03 |
| 12 | MTB 410     | Media Semiotics                          | 03 |
| 13 | MTB 411     | Introduction to Film Making and Analysis | 03 |
| 14 | MTB 412     | Electronic News Gathering (ENG)          | 03 |
| 15 | MTB 413     | Music Video Creation (MVC)               | 03 |
| 17 | MTB 209     | Evolution of Television                  | 03 |
| 18 | MTB 302     | Process & Effects of Communication       | 03 |
| 19 | MTB 311     | Media & Social Psychology                | 03 |
| 20 | MTB 404     | TV & Globalization                       | 03 |
| 21 | MTB 403     | Drama Production                         | 03 |
| 22 | MTB 414     | Film and Cinematography                  | 03 |
| 23 | MTB 419     | Digital Media Literacy                   | 03 |
| 24 | MED 110     | Photography                              | 03 |
| 25 | MED 308     | Video Editing                            | 03 |
| 26 | MED 315     | Sound Design                             | 03 |
| 27 | MED 420     | Media Entrepreneurship                   | 03 |
| 28 | MED 318     | Film Analysis                            | 03 |



## MS Media Studies (2 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

16 years of education with Bachelors/ equivalent degree from HEC recognized university in Media Studies/ Political Science/ International Relations or any other discipline of Social Sciences with the minimum CGPA of 2.0/4.0 or 50% marks where CGPA is not given.

GAT (Gen)/ GRE (General) passed with the minimum 50% marks or BU test (50% minimum passing marks). Results are to be submitted at the time of application in case of GAT (General) or GRE (General) or as prescribed by the University.

HEC's attestation on the candidate's local degrees (on the back of the original degrees). HEC's equivalency certificate for the candidate's foreign degrees.

## Road Map

### Semester 1

| S.# | Course Code | Course Title                          | Credit Hours |
|-----|-------------|---------------------------------------|--------------|
| 1   | MSM 700     | Theories of Traditional Media         | 3            |
| 2   | MSM 702     | Research Methods in Traditional Media | 3            |
| 3   |             | Elective -I                           | 3            |
| 4   |             | Elective -II                          | 3            |

## Semester 2

| S.# | Course Code | Course Title                                        | Credit Hours |
|-----|-------------|-----------------------------------------------------|--------------|
| 1   | MSM 701     | Social Media Theories                               | 3            |
| 2   | MSM 703     | Social Media Research Methods                       | 3            |
| 3   | MSM 707     | Contemporary issues and Challenges in Communication | 3            |
| 4   |             | Elective-III                                        | 3            |

## Semester 3

| S.# | Course Code | Course Title                    | Credit Hours |
|-----|-------------|---------------------------------|--------------|
| 1   |             | Thesis / Final Project*/Courses | 3            |

\*Project will be evaluated by one internal examiner and one external examiner

## Semester 3

| S.# | Course Code | Course Title                    | Credit Hours |
|-----|-------------|---------------------------------|--------------|
| 1   |             | Thesis / Final Project*/Courses | 3            |

## List of Electives

| Course Code | Course Title                              | Credit Hours |
|-------------|-------------------------------------------|--------------|
| MSM 710     | Social Media and Society                  | 3            |
| MSM 704     | Global Communication                      | 3            |
| MSM 705     | Media Landscape in Pakistan               | 3            |
| MSM 706     | Peace Communication                       | 3            |
| MSM 713     | Communication, Activism and Social Change | 3            |
| MSM 712     | Philosophical debates in social sciences  | 3            |



|         |                                                   |   |
|---------|---------------------------------------------------|---|
| MSM 721 | Critical Journalism Studies                       | 3 |
| MSM 714 | Health Communication                              | 3 |
| MSM 715 | Climate Communication                             | 3 |
| MSM 718 | Debates in Political Communication                | 3 |
| MSM 717 | Media Culture and Society: A Critical Analyses    | 3 |
| MSM 719 | Film Studies: A Comparative and Critical Analysis | 3 |
| MSM 720 | Human Rights Communication                        | 3 |
| MSM 723 | Gender in Media and Communication                 | 3 |
| MSM 724 | Environmental Communication                       | 3 |
| MSM 722 | Science Communication                             | 3 |
| MSM 716 | Communication and Technology                      | 3 |
| MPT 701 | DigitalMediaAnalytics                             | 3 |
| MPT 704 | Cinematography:TheArtof Visual Storytelling       | 3 |
| MPT 707 | DisasterCommunication                             | 3 |
| MPT 708 | AdvertisingandBrand Strategy                      | 3 |
| MPT 709 | MobileMediaand Communication                      | 3 |
| MPT 710 | StrategicCommunication                            | 3 |
| MPT 703 | DigitalMediaandSociety                            | 3 |
| MPT 702 | MediaandPublic Diplomacy                          | 3 |
| THS 799 | Final Project                                     | 3 |



## PhD Media Studies (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

18 year of education (MS/MPhil/equivalent degree) in relevant discipline from an HEC recognized university with a minimum CGPA of 3.00/4.00 (semester system) or 60% marks (annual system). HEC's attestation is required for all local degrees (on the back of original degree). HEC's equivalent certificate would be required for the candidate with foreign degree.

GAT (subject test), or GRE (subject test), or University Based Test passed with minimum 70 marks. Result has to be submitted at the time of admission.

### SEMESTER-I

- 1 Research methods in Media Studies
- 2 Media Debate: Issues in Communication
- 3 Elective\*

\*1: Theories of Influencing Media Content, 2: Media and Globalization, 3: Approaches to Media Affects

### 3 Total credit for 1<sup>st</sup> semester

### SEMESTER - II

- 4 Methods of Content Analysis
- 5 Advances in Mass Comm. Research
- Elective\*\*

\*\*1: Political Communication, 2: Media and Society, 3: Comparative Media Studies

### 3 Total credit for 2nd semester

### SEMESTER - III

Comprehensive exam

Supervised research (PhD thesis) including defense and acceptance of research proposal



### Total credit for 3rd semester

#### SEMESTER - IV

Supervised research (PhD thesis) including design and implementation of proposed solution.

#### SEMESTER -V

Supervised research (PhD thesis) including analysis of the results and thesis write-up.

#### SEMESTER -VI

Supervised research (PhD thesis) – submission of the final thesis for evaluation.

**Total credit for PhD program 54**

### COMPULSORY COURSES

| COURSE CODE | TITLE OF COURSE                           | CR. HRS |
|-------------|-------------------------------------------|---------|
| MSM 801     | Research Methods in Media & Comm. Studies | 3       |
| MSM 802     | Media Debate: Issues in Communication     | 3       |
| MSM 804     | Methods of Content Analysis               | 3       |
| MSM 805     | Advances in Mass Comm. Research           | 3       |

### ELECTIVE COURSES

| COURSE CODE | TITLE OF COURSE                          | CR. HRS |
|-------------|------------------------------------------|---------|
| MSM 806     | Political Communication                  | 3       |
| MSM 807     | Media and Society                        | 3       |
| MSM 812     | Approaches to Media Affects              | 3       |
| MSM 803     | Theories of Influencing Media Content    | 3       |
| MSM 803     | Media and Globalization                  | 3       |
| MSM 810     | Media ethics and Law                     | 3       |
| MSM 809     | Theories and Strategies of communication | 3       |
| MSM 808     | Media & Sociology                        | 3       |
| MSM 811     | Qualitative Research Methods             | 3       |

## DEPARTMENT OF ISLAMIC STUDIES

### MS ISLAMIC STUDIES - ISLAM & LIFE (2 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:**

Minimum Entry Level: 4 years BS (Islamic Studies)/M.A (Islamic Studies) or equivalent, or Shahda Al Almia (Wifaq ul Madaras) with HEC equivalence or 16-year education in any field (Qualifying in the admission test of BU).

### ROADMAP

#### First Semester (12 CR)

| S.No. | Course Code | Course Title                | Credit Hours |
|-------|-------------|-----------------------------|--------------|
| 1     | ISS 701     | Advance Arabic Language     | 3            |
| 2     | ISS 706     | Research Methods and Tools  | 3            |
| 3     |             | Elective-I                  | 3            |
| 4     |             | Elective-II                 | 3            |
|       |             | Total Semester Credit Hours | 12           |

#### Second Semester (12 CR)

| S.No. | Course Code | Course Title                      | Credit Hours |
|-------|-------------|-----------------------------------|--------------|
| 1     | ISS 704     | Islamic Economic System & Banking | 3            |
| 2     | ISS 702     | Islam and Social System           | 3            |
| 3     |             | Elective-III                      | 3            |
| 4     |             | Elective-IV                       | 3            |
|       |             | Total Semester Credit Hours       | 12           |

### Third Semester (3 Cr)

| S.No. | Course Code | Course Title | Credit Hours |
|-------|-------------|--------------|--------------|
| 1     | THS 799     | Thesis       | 06           |

### Fourth Semester (3 Cr)

| S.No. | Course Code | Course Title | Credit Hours |
|-------|-------------|--------------|--------------|
| 1     | THS 799     | Thesis       | 06           |

### LIST OF COMPULSORY COURSES

| Course Code | Course Title                      | Credit Hours |
|-------------|-----------------------------------|--------------|
| ISS 701     | Advance Arabic Language           | 3            |
| ISS 706     | Research Methods and Tools        | 3            |
| ISS 704     | Islamic Economic System & Banking | 3            |
| ISS 702     | Islam and Social System           | 3            |

### LIST OF ELECTIVE COURSES

| Course Code | Course Title                   | Credit Hours |
|-------------|--------------------------------|--------------|
| ISS 703     | Muslim Philosopher and Nature  | 3            |
| ISS 705     | Islamic Art and Modernity      | 3            |
| ISS 711     | UsoolWa Adab Ullkhtilaf        | 3            |
| ISS 712     | Jurisprudence of Seerah        | 3            |
| ISS 713     | Islam and Modern Science       | 3            |
| ISS 714     | Selected Textual Study of Fiqh | 3            |
| ISS 715     | Methodologies of Muhaddithin   | 3            |



|         |                                    |   |
|---------|------------------------------------|---|
| ISS 716 | Study of Tafseer and Hadith        | 3 |
| ISS 717 | Tafseer and Its Trends             | 3 |
| ISS 718 | Study of Orientalism               | 3 |
| ISS 719 | National Defence & Islam           | 3 |
| ISS 720 | Fundamental Human Rights and Islam | 3 |
| ISS 721 | Muslim History of Maritime         | 3 |

## BS Islamic Studies (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

### Eligibility Criteria:

Intermediate or it's equivalent with a minimum of 50% marks in any discipline and Shahadah Khassah 50% with BCCI (UG) Equivalency Certificate.

### Road Map of BS Islamic Studies

| SEMESTER      | COURSE                                                | CHS |
|---------------|-------------------------------------------------------|-----|
| <b>FIRST</b>  | FUNCTIONAL ENGLISH<br>ENG 103<br>ENGLISH-I            | 03  |
|               | ISLAMIC STUDIES<br>ISL 101                            | 02  |
|               | MATHEMATICS (MAT 105)                                 | 03  |
|               | INTRODUCTION TO MEDIA STUDIES<br>HSS 115<br>GENERAL-I | 03  |
|               | INTRODUCTION TO SOCIOLOGY HSS 202<br>GENERAL-II       | 03  |
|               | FOUNDATION-1<br>ISA 101 ARABIC - I                    | 03  |
| <b>SECOND</b> | COMMUNICATION SKILLS (ENG 104) ENGLISH-II             | 03  |
|               | PAKISTAN STUDIES<br>PAK 101                           | 02  |
|               | INTRODUCTION TO COMPUTER BES 101                      | 03  |

|  |                                                     |    |
|--|-----------------------------------------------------|----|
|  | GENERAL-III INTRODUCTION TO ANTHROPOLOGY HSS 201    | 03 |
|  | GENERAL-IV<br>INTRODUCTION TO PSYCHOLOGY<br>HSS 107 | 03 |

|               |                                                                      |    |
|---------------|----------------------------------------------------------------------|----|
|               | FOUNDATION -II<br>ARABIC - II ISA 102                                | 03 |
| <b>THIRD</b>  | TECHNICAL WRITING AND PRESENTATION<br>SKILLS (ENG 105) ENGLISH III   | 03 |
|               | MAJOR-I<br>ULUM-UL-QURAN<br>ISQ 201                                  | 03 |
|               | GENERAL-V<br>INTRODUCTION TO ENVIRONMENTAL<br>SCIENCES ENV 110       | 03 |
|               | GENERAL-VI<br>INTRODUCTION TO PHILOSOPHY<br>HSS 102                  | 03 |
|               | FOUNDATION-III<br>ARABIC III<br>ISA 202                              | 03 |
|               | FOUNDATION-IV<br>TAJWEED<br>IST 203                                  | 03 |
| <b>FOURTH</b> | (UNI OPT)<br>CRITICAL THINKING<br>BES 103                            | 03 |
|               | GENERAL-VII<br>INTRODUCTION TO INTERNATIONAL<br>RELATIONS<br>HSS 111 | 03 |
|               | FOUNDATION-V<br>STUDY OF TASAWWUF ISP 204                            | 03 |

|              |                                                                      |    |
|--------------|----------------------------------------------------------------------|----|
|              | FOUNDATION-VI<br>RESEARCH METHODS IN ISLAMIC<br>STUDIES I<br>ISR 205 | 03 |
|              | FOUNDATION-VII<br>ISLAMIC SOCIAL NORMS<br>ISC 206                    | 03 |
| <b>FIFTH</b> | FOUNDATION-VIII MUSLIM IDEA OF NATURE ISP<br>301                     | 03 |
|              | FOUNDATION-IX QURAN AND SCIENCE ISQ 302                              | 03 |
|              | ELECTIVE-I<br>HISTORY AND COMPILATION OF<br>HADITH<br>ISH 303        | 03 |
|              | MAJOR-II<br>TEXTUAL STUDY OF TAFSEER ISQ 304                         | 03 |
|              | MAJOR-III<br>TEXTUAL STUDY OF HADITH ISH 305                         | 03 |
|              | MAJOR-IV<br>TEXTUAL STUDY OF FIQH ISF 306                            | 03 |
| <b>SIXTH</b> | FOUNDATION-X<br>RESEARCH METHODS IN ISLAMIC<br>STUDIES II<br>ISR 307 | 03 |

|  |                                                                     |    |
|--|---------------------------------------------------------------------|----|
|  | MAJOR-V<br>CONTEMPORARY DEBATES IN<br>ISLAMIC PHILOSOPHY<br>ISP 308 | 03 |
|  | MAJOR-VI<br>ILM-UL-TAKHREEJ<br>ISH 309                              | 03 |
|  | MAJOR-VII<br>ISLAM AND MODERN ECONOMIC<br>ISSUES<br>ISF 310         | 03 |

|                |                                                          |    |
|----------------|----------------------------------------------------------|----|
|                | MAJOR-VIII<br>ETHICS OF DIALOGUE<br>ISP 311              | 03 |
|                | INTRODUCTION TO ARTIFICIAL INTELLIGENCE<br>(—)           | 03 |
| <b>SEVENTH</b> | MAJOR-IX<br>TRENDS OF TAFSEER ISQ 401                    | 03 |
|                | MAJOR-X<br>HADITH AND MUHADDITHUN<br>ISH 402             | 03 |
|                | ELECTIVE-II<br>ISLAM AND POLITICS<br>ISP 403             | 03 |
|                | ELECTIVE-III<br>CONCEPT OF FINE ARTS IN ISLAM<br>ISC 404 | 03 |
|                | ELECTIVE-IV<br>STUDY OF ORIENTALISM<br>ISP 405           | 03 |
| <b>EIGHT</b>   | ELECTIVE-V<br>MARITIME MUSLIM HISTORY<br>ISC 406         | 03 |
|                | ELECTIVE VI<br>ISLAMIC ECONOMICS AND FINANCE<br>ISP 407  | 03 |
|                | MAJOR XI-XII<br>RESEARCH THESIS/ TWO COURSES             | 06 |

## PhD Islamic Studies (3 Years)

**Campus:** ??

**Program Duration:** 3 Years

**Program Timing:** Morning

### Eligibility Criteria:

MS/MPhil or 18 Year education equivalent degree from HEC recognized University/ Institution. A minimum CGPA of 3.0 out of 4.0 in the semester system or 60% marks in the annual system. Following Documents shall accompany the application:

1. A Statement of Purpose and a Research Proposal in the area of interest for PhD programs.
2. Equivalent Score Card with 60% marks or BU Test 70% passing.
3. NTS-GAT (General) or GRE (General) Test passed with minimum 60% marks or BU Admission Test (60% passing marks).

Additionally, applicants must provide HEC verification of all academic certificates / degrees.

Semester-wise Road map

### Road Map of PhD Islamic Studies

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |                                           |              |                                                       |
|--------------------|--------------------------------------------------|-------------|-------------------------------------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title                              | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | ISL 801     | Uloom UI Quran & modern exegesis trends   | 3            | 4                                                     |
| 2                  |                                                  | ISL 802     | Modern Research Techniques and Principles | 3            | 4                                                     |
| 3                  |                                                  |             | Elective 1                                | 3            |                                                       |
| Total Credit Hours |                                                  |             |                                           | 9            |                                                       |

## Semester 2

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |                                   |              |                                                       |
|--------------------|--------------------------------------------------|-------------|-----------------------------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title                      | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | ISL 803     | Applied Study of Ahadith-UI-Ahkam | 3            | 4,16                                                  |
| 2                  |                                                  |             | Elective 2                        | 3            |                                                       |
| 3                  |                                                  |             | Elective 2                        | 3            |                                                       |
| Total Credit Hours |                                                  |             |                                   | 9            |                                                       |

## Semester 3

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |              |              |                                                       |
|--------------------|--------------------------------------------------|-------------|--------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | THS 900     | Thesis       | 9            | All the above                                         |
| Total Credit Hours |                                                  |             |              | 9            |                                                       |

## Semester 4

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |              |              |                                                       |
|--------------------|--------------------------------------------------|-------------|--------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | THS 900     | Thesis       | 9            | All the above                                         |
| Total Credit Hours |                                                  |             |              | 9            |                                                       |

## Semester 5

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |              |              |                                                       |
|--------------------|--------------------------------------------------|-------------|--------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | THS 900     | Thesis       | 9            | All the above                                         |
| Total Credit Hours |                                                  |             |              | 9            |                                                       |

## Semester 6

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |              |              |                                                       |
|--------------------|--------------------------------------------------|-------------|--------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | THS 900     | Thesis       | 9            | All the above                                         |
| Total Credit Hours |                                                  |             |              | 9            |                                                       |

## List of Electives Courses

| Sr. No. | Proposed Road map aligned with HEC new UG Policy |             |                                   |              |                                                       |
|---------|--------------------------------------------------|-------------|-----------------------------------|--------------|-------------------------------------------------------|
|         | Pre-requisite Course Code                        | Course Code | Course Title                      | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
|         |                                                  | ISL 804     | Applied Study of Ayat-UI-Ahkam    | 3            | 1,3,4                                                 |
|         |                                                  | ISL 805     | Ijtihad and Objectives of Shariah | 3            | 16                                                    |

|  |  |         |                                                                            |   |                 |
|--|--|---------|----------------------------------------------------------------------------|---|-----------------|
|  |  | ISL 806 | Family and Inheritance Law in Islam                                        | 3 | 11,16,5         |
|  |  | ISL 807 | Contemporary Islamic Thought                                               | 3 | 4,16            |
|  |  | ISL 808 | Islam and the Modern Political System                                      | 3 | 11,17           |
|  |  | ISL 809 | Muslim Philosophers and Theologists                                        | 3 | 11              |
|  |  | ISL 810 | Islamic and Religious Pluralism                                            | 3 | 10              |
|  |  | ISL 811 | Islamic Financial System                                                   | 3 | 1,8,12          |
|  |  | ISL 812 | Seminars on Interdisciplinary Studies in Science, Philosophy, and Religion | 3 | 7,9,13,14,15,16 |
|  |  | ISL 813 | Understanding Seerah Trends                                                | 3 | 16              |
|  |  | ISL 814 | Interfaith Dialogue and Islamic Principles of Adbullkhtelaf                | 3 | 10,16           |

## List of Deficiency Courses

| Sr. No.            | Proposed Road map aligned with HEC new UG Policy |             |                                        |              |                                                       |
|--------------------|--------------------------------------------------|-------------|----------------------------------------|--------------|-------------------------------------------------------|
|                    | Pre-requisite Course Code                        | Course Code | Course Title                           | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
| 1                  |                                                  | ISL 801     | UloomUI Quran & modern exegesis trends | 3            | 4                                                     |
| 2                  |                                                  | ISL 803     | Applied Study of Ahadith-UI-Ahkam      | 3            | 4,16                                                  |
| Total Credit Hours |                                                  |             |                                        |              |                                                       |

# INSTITUTE OF PROFESSIONAL PSYCHOLOGY

## Programs offered:

- BS in Psychology
- Advanced Diploma in Infant, Child and Adolescent Mental Health
- MS in Clinical Psychology
- MPhil in Professional Psychology
- PhD in Professional Psychology IPP/ PhD in Clinical Psychology (Islamabad)

## BS Psychology (4 Years)

**Campus:** IPP, Islamabad & Lahore

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:** Intermediate/A-level/Equivalent with at least 50% marks.

## BS in Psychology Roadmap

### SEMESTER-1

| Course Code | Name of Subject                   | Credit Hours |
|-------------|-----------------------------------|--------------|
| ENG 101     | Functional English                | 3            |
| PAK 105     | Pakistan Studies                  | 2            |
| ENV 100     | Fundamentals of Biology           | 3            |
| BES 101     | Introduction to Computers         | 3            |
| PSY 107     | Introduction to Psychology        | 3            |
| SOP 105     | Introduction to Social Psychology | 3            |
| ISL 107     | Tajweed                           | Non Credited |
|             | Total                             | 17           |

## SEMESTER-2

| Course Code      | Name of Subject                            | Credit Hours |
|------------------|--------------------------------------------|--------------|
| ENG 102          | English Writing Skills                     | 3            |
| HSS 218          | Introduction to Anthropology               | 2            |
| MAT 105          | Mathematics                                | 3            |
| ISL 101/ HSS 116 | Islamic Studies/ Ethics (For Non- Muslims) | 2            |
| HIS 109          | History and Schools of Psychology          | 3            |
| HTP 457          | Health Psychology                          | 3            |
| ISL 108          | Understanding Quran I                      | Non Credited |
|                  | Total                                      | 16           |

## SEMESTER-3

| Course Codes | Name of Subject                            | Credit Hours |
|--------------|--------------------------------------------|--------------|
| ENG 213      | Oral Communication and Presentation Skills | 3            |
| CCE 310      | Civics and Community Engagement            | 2            |
| LSP 220      | Psychology of Lifespan                     | 3            |
| PER 214      | Theories of Personality – I                | 3            |
| PRC 223      | Psychological Practicum                    | 3            |
| EXP 216      | Experimental Psychology – I                | 3            |
| ISL 109      | Understanding Quran II                     | Non Credited |
|              | Total                                      | 17           |



## SEMESTER-4

| Course Codes | Name of Subject              | Credit Hours |
|--------------|------------------------------|--------------|
| ENG 224      | Creative Writing             | 3            |
| HSS 423      | Entrepreneurship             | 2            |
| HSS 226      | Introduction to Philosophy   | 2            |
| MAT 205      | Statistics                   | 3            |
| EXP 221      | Experimental Psychology – II | 3            |
| PER 219      | Theories of Personality – II | 3            |
| ISL 110      | Understanding Quran III      | Non Credited |
|              | Total                        | 16           |

## SEMESTER-5

| Course Codes | Name of Subject                     | Credit Hours |
|--------------|-------------------------------------|--------------|
| COU 443      | Counseling                          | 3            |
| MHP 325      | Mental Health & Psychopathology – I | 3            |
| COG 326      | Cognitive Psychology                | 3            |
| POS 327      | Positive Psychology                 | 3            |
| TES 328      | Psychological Testing – I           | 3            |
| HSS 108      | Introduction to Sociology           | 3            |
| ISL 111      | Understanding Quran IV              | Non Credited |
|              | Total                               | 18           |



## SEMESTER-6

| Course Codes | Name of Subject                         | Credit Hours |
|--------------|-----------------------------------------|--------------|
| STA 330      | Statistical Tools for Social Sciences   | 3            |
| MHP 331      | Mental Health & Psychopathology – II    | 3            |
| NEU 332      | Neurological Basis of Behavior          | 3            |
| CLI 333      | Clinical Psychology                     | 2            |
| TES 334      | Psychological Testing – II              | 3            |
| HSS 111      | Introduction to International Relations | 3            |
| ISL 112      | Understanding Quran V                   | Non Credited |
|              | Total                                   | 17           |

## SEMESTER-7

| Course Codes | Name of Subject               | Credit Hours |
|--------------|-------------------------------|--------------|
| RES 437      | Research Methodology – I      | 3            |
| EDU 442      | Educational Psychology        | 2            |
| HSS 115      | Introduction to Media Studies | 3            |
| INT 437      | Internship                    | 3            |
|              | Elective                      | 3            |
|              | Elective                      | 3            |
| ISL 113      | Seerah I                      | Non Credited |
|              | Total                         | 17           |

## SEMESTER-8

| Course Codes | Name of Subject                   | Credit Hours |
|--------------|-----------------------------------|--------------|
| RPT361       | Research Project                  | 3            |
| ORG 454      | Organizational Psychology         | 2            |
| RES 446      | Research Methodology – II         | 3            |
| HSS 112      | Introduction to Political Science | 3            |
|              | Elective                          | 3            |
|              | Elective                          | 3            |
| ISL 114      | Seerah II                         | Non Credited |
|              | Total                             | 17           |

## LIST OF ELECTIVE COURSES

| Course Codes | Elective Courses                         |
|--------------|------------------------------------------|
|              | <b>7<sup>th</sup> Semester</b>           |
| TEL 438      | Teaching & Learning                      |
| COB 439      | Consumer Behavior                        |
| PCC 440      | Psychology of Cross Cultural Differences |
| CLP 441      | Clinical Pharmacology                    |
| HIV 443      | Counseling for HIV/ AIDs and STIs        |
| CHP 444      | Child Psychology                         |
| PSM 445      | Psychology of Motivation                 |
| MPY 439      | Maritime Psychology                      |
|              | <b>8<sup>th</sup> Semester</b>           |
| COP 447      | Community Psychology                     |
| PSC 448      | Psychology of Special Children           |
| ENV 449      | Environmental Psychology                 |
| HRM 353      | Human Resource Management                |



|         |                                                    |
|---------|----------------------------------------------------|
| IPP 450 | Islamic Approaches to Psychology and Psychotherapy |
| PSL 451 | Psychology of Leadership                           |
| GRD 452 | Group Dynamics                                     |
| ABA 453 | Applied Behavioral Analysis                        |
| FRP 456 | Forensic Psychology                                |
| SEP 458 | Sports and Exercise Psychology                     |

|                                     |                         |
|-------------------------------------|-------------------------|
| <b>General Education</b>            | <b>36 Credit Hours</b>  |
| <b>Major/ Disciplinary</b>          | <b>81 Credit Hours</b>  |
| <b>Interdisciplinary/ Allied</b>    | <b>12 Credit Hours</b>  |
| <b>Field Experience/ Internship</b> | <b>03 Credit Hours</b>  |
| <b>Research Project</b>             | <b>03 Credit Hours</b>  |
| <b>Total</b>                        | <b>135 Credit Hours</b> |



**Non Psychology Courses:** 57 Cr. Hrs

**Psychology Courses:** 75 Cr. Hrs

**Total Credit Hours:** 132 Cr. Hrs

**UNIVERSITY REQUIREMENT ELECTIVE COURSES**

| S.No. | Course Code | Course title                             | Credit Hours |
|-------|-------------|------------------------------------------|--------------|
| 1     | HSS 216     | Deviant Behavior                         | 3            |
| 2     | HSS 103     | Introduction to Interior Design          | 3            |
| 3     | HSS 204     | Social Problems                          | 3            |
| 4     | HSS 110     | Introduction to Development Studies      | 3            |
| 5     | HSS 111     | Introduction to International Relations  | 3            |
| 6     | HSS 113     | Introduction to Modern World History     | 3            |
| 7     | MTB 201     | Media Law and Ethics                     | 3            |
| 8     | MST 405     | Investigative and Interpretive Reporting | 3            |
| 9     | HSS 102     | Introduction to Philosophy               | 3            |
| 10    | ANT 101     | Introduction to Anthropology             | 3            |
| 11    | HSS 202     | Introduction to Sociology                | 3            |
| 12    | HSS 115     | Introduction to Media Studies            | 3            |



## MS Clinical Psychology (2 Years)

**Campus:** IPP, Islamabad & Lahore

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

Minimum 16 years of education in the relevant field of Psychology with a minimum of 50% marks (in annual system) or CGPA 2.0/4.0 (in semester system). GAT (General) with minimum 50% marks required at the time of admission or University Test.

### Roadmap MS Clinical Psychology

#### Semester 1

| Course Code | Course Title                                                   | Credit Hours |
|-------------|----------------------------------------------------------------|--------------|
| CPY 743     | Humanistic and Existential Therapies                           | 2            |
| CPY 757     | Applied Behavioral Analysis                                    | 2            |
| CPY 756     | Psychodiagnosis & Intellectual & Neuropsychological Assessment | 3            |
| PPY 702     | Research Methods                                               | 3            |
| CPY 747     | Neurological Basis of Behavior                                 | 2            |

#### Semester 2

| Course Code | Course Title                 | Credit Hours |
|-------------|------------------------------|--------------|
| CPY 752     | Cognitive Behavioral Therapy | 2            |
| CPY 748     | Personality Assessment       | 3            |
| CPY 755     | Pharmacology                 | 2            |
| CPY 754     | Internship I                 | 2            |

### Semester 3

| Course Code | Course Title                                               | Credit Hours |
|-------------|------------------------------------------------------------|--------------|
| CPY 749     | Psychodynamic Therapies                                    | 3            |
| CPY 750     | Psychopathology & Psychotherapies of Children/ Adolescents | 3            |
| CPY 713     | Internship II                                              | 3            |
| THS 799     | Thesis                                                     | 3            |

### Semester 4

| Course Code | Course Title   | Credit Hours |
|-------------|----------------|--------------|
| CPY 751     | Internship III | 3            |
| THS 799     | Thesis         | 3            |

**Coursework = 25 Cr. Hrs**  
**Internship = 08 Cr. Hrs**  
**Thesis = 06 Cr. Hrs**  
**Total = 39 Cr. Hrs**



## MPhil PROFESSIONAL PSYCHOLOGY (2 Years)

**Campus:** IPP

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

Minimum 16 years of education in the relevant field of Psychology with a minimum of 50% marks (in annual system) or CGPA 2.0/4.0 (in semester system).

**Program Duration:** 2 Years (4 Semesters)

### Available Specialization:

- Clinical Psychology
- Educational Psychology
- Organizational Psychology

## ROADMAP

### First Year

#### Semester 1

| Course Code | Course Title                 | Credit Hours |
|-------------|------------------------------|--------------|
| PPY 702     | Research Methods             | 3            |
| PPY 703     | Measurement and Assessment I | 3            |
|             | <b>Elective I</b>            | 3            |
|             | <b>Elective II</b>           | 3            |

## Semester 2

| Course Code | Course Title                         | Credit Hours |
|-------------|--------------------------------------|--------------|
| PPY 710     | Statistical Inferences in Psychology | 3            |
| PPY 711     | Measurement and Assessment II        | 3            |
|             | <b>Elective III</b>                  | 3            |
|             | <b>Elective IV</b>                   | 3            |

## Summer Semester

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
| PPY 719     | Internship I | -            |

## Second Year

### Semester 3

| Course Code | Course Title  | Credit Hours |
|-------------|---------------|--------------|
| PPY 720     | Internship II | 6            |
| THS 799     | Thesis        | 3            |

### Semester 4

| Course Code | Course Title   | Credit Hours |
|-------------|----------------|--------------|
| PPY 721     | Internship III | 6            |
| THS 799     | Thesis         | 3            |

**Course work** = 24 Cr. Hrs  
**Internship** = 12 Cr. Hrs  
**Thesis** = 06 Cr. Hrs  
**Total** = 42 Cr. Hrs

Elective Courses **(Clinical Psychology) 04** courses shall be chosen as per advice of the supervisor.

| Course Code | Electives Course                         | Credit Hours |
|-------------|------------------------------------------|--------------|
| PPY 704     | Classical Approaches to Psychotherapies  | 3            |
| PPY 707     | Neurophysiology                          | 3            |
| PPY 712     | Contemporary Approaches to Psychotherapy | 3            |
| PPY 715     | Pharmacology                             | 3            |
| PPY 722     | Cognitive Behavioural Therapy            | 3            |
| PPY 723     | Humanistic and Existential Therapies     | 3            |

Elective Courses **(Educational Psychology) 04** courses shall be chosen as per advice of the supervisor.

| Course Code | Elective Courses                                             | Credit Hours |
|-------------|--------------------------------------------------------------|--------------|
| PPY 705     | Theories of Counselling                                      | 3            |
| PPY 708     | Patterns of Child Rearing and Development of Personality     | 3            |
| PPY 724     | Educational Coaching and Consultancy                         | 3            |
| PPY 725     | Educational Neuroscience                                     | 3            |
| PPY 726     | Cognitive Behavioural Therapies for Children and Adolescents | 3            |
| PPY 727     | Group Process in Educational Settings                        | 3            |

Elective Courses **(Organizational Psychology) 04** courses shall be chosen as per advice of the supervisor.



| Course Code | Elective Courses                        | Credit Hours |
|-------------|-----------------------------------------|--------------|
| PPY 706     | Vocational Guidance and Counselling     | 3            |
| PPY 709     | Personnel Selection and Job analysis    | 3            |
| PPY 717     | Organizational Leadership and Marketing | 3            |
| PPY 728     | Organizational Consulting Skills        | 3            |
| PPY 729     | Human Factors in Work Environment       | 3            |
| PPY 730     | Organizational Development and Change   | 3            |



## PHD IN PROFESSIONAL PSYCHOLOGY (IPP) / PHD IN CLINICAL PSYCHOLOGY (ISLAMABAD)

**Campus:** IPP & Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

- 18 years of education in the relevant field of Psychology including clinical internship and course contents from an HEC recognized university with a minimum CGPA of 3.00/4.00 (Semester System) or 60% marks (Annual System).
- NTS-GAT (Subject) or GRE (Subject) Test passed with minimum 60% marks or BU Admission Test (70% passing marks).
- Initial Research Proposal/Statement of Purpose is required at the time of PhD admission.

## ROADMAP

### First Year

#### Semester 1

| Course Code | Course Title                                       | Credit Hours |
|-------------|----------------------------------------------------|--------------|
| PPY 801     | Advanced Quantitative Research and Research Ethics | 3            |
|             | Elective I                                         | 3            |
|             | Elective II                                        | 3            |



## Semester 2

| Course Code | Course Title                                      | Credit Hours |
|-------------|---------------------------------------------------|--------------|
| PPY 810     | Advanced Qualitative Research and Research Ethics | 3            |
|             | Elective III                                      | 3            |
|             | Elective IV                                       | 3            |

## Summer Semester

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
| PPY 819     | Internship I | 9            |

## Second Year

### Semester 3

| Course Code | Course Title  | Credit Hours |
|-------------|---------------|--------------|
| PPY 820     | Internship II | 3            |
| THS 900     | Thesis        | 9            |

### Semester 4

| Course Code | Course Title   | Credit Hours |
|-------------|----------------|--------------|
| PPY 821     | Internship III | 3            |
| THS 900     | Thesis         | 9            |

**Third Year**  
**Semester 5**

| Course Code | Course Title  | Credit Hours |
|-------------|---------------|--------------|
| PPY 822     | Internship IV | 3            |
| THS 900     | Thesis        | 9            |

**Semester 6**

| Course Code | Course Title                              | Credit Hours |
|-------------|-------------------------------------------|--------------|
| THS 900     | Thesis                                    | 9            |
| PPY 823     | Didactic Analysis / Professional Training | 3            |

|                                   |                     |
|-----------------------------------|---------------------|
| <b>Course Work</b>                | <b>= 18 Cr. Hrs</b> |
| <b>Internship</b>                 | <b>= 18 Cr. Hrs</b> |
| <b>DA / Professional Training</b> | <b>= 03 Cr. Hrs</b> |
| <b>Thesis</b>                     | <b>= 36 Cr. Hrs</b> |
| <b>Total</b>                      | <b>= 75 Cr. Hrs</b> |

Elective Courses **(Clinical Psychology) 04** courses shall be chosen as per advice of the supervisor.

| Course Code | Elective Courses                                | Credit Hours |
|-------------|-------------------------------------------------|--------------|
| PPY 804     | Expressive Art Therapy                          | 3            |
| PPY 813     | Complementary and Alternative Healing Therapies | 3            |
| PPY 836     | Psychological Rehabilitation                    | 3            |
| PPY 837     | Hypnotherapy                                    | 3            |
| PPY 838     | Group Psychotherapy                             | 3            |
| PPY 839     | System/Family Therapy                           | 3            |
| PPY 840     | Diversity in Assessment and Intervention        | 3            |
| PPY 841     | Clinical Consultation and Supervision           | 3            |

Elective Courses (**Educational Psychology**) **04** courses shall be chosen as per advice of the supervisor.

| Course Code | Elective Courses                                      | Credit Hours |
|-------------|-------------------------------------------------------|--------------|
| PPY 806     | Vocational Guidance                                   | 3            |
| PPY 815     | Educational Counselling                               | 3            |
| PPY 817     | Psychotherapy with Children and Adolescents           | 3            |
| PPY 842     | Learning Process in Relation to Educational Practices | 3            |
| PPY 843     | Instructional Systems Design                          | 3            |
| PPY 844     | Developmental Issues in Instruction                   | 3            |
| PPY 845     | Creativity For Teachers                               | 3            |
| PPY 846     | Diversity and Equity Issues in Education              | 3            |

Elective Courses (**Organizational Psychology**) **04** courses shall be chosen as per advice of the supervisor.

| Course Code | Elective Courses                              | Credit Hours |
|-------------|-----------------------------------------------|--------------|
| PPY 809     | Work Team Dynamics                            | 3            |
| PPY 847     | Leadership Development and Assessment         | 3            |
| PPY 848     | Diversity, Inclusion and Change               | 3            |
| PPY 849     | Crisis Management                             | 3            |
| PPY 854     | Organizational Design and Process Improvement | 3            |
| PPY 851     | Positive Organizational Psychology            | 3            |
| PPY 852     | Theory and Practice of Counselling            | 3            |
| PPY 853     | HR Strategic Management                       | 3            |



## ADVANCED DIPLOMA IN INFANT, CHILD, AND ADOLESCENT MENTAL HEALTH

**Duration:** 1 Year, 2 Semesters

**Campus:** Islamabad & Lahore

**Eligibility Criteria:**

Minimum 16 years of education in the relevant field of Psychology with a minimum of 50% marks (in annual system) or CGPA 5/4.0 (in semester system).

### ROADMAP

**Semester 1:**

| S. No. | Course Code | Course Title                                                   | Total Credit Hrs |
|--------|-------------|----------------------------------------------------------------|------------------|
| 1      |             | Child and Adolescent Development                               | 3                |
| 2      |             | Child and Adolescent Psychopathology                           | 3                |
| 3      |             | Psychological Assessment in Child and Adolescent Mental Health | 3                |
| 4      |             | Applied Behavior Analysis                                      | 3                |
|        |             |                                                                | <b>12</b>        |



## Semester 2:

| S. No. | Course Code | Course Title                                       | Total Credit Hrs |
|--------|-------------|----------------------------------------------------|------------------|
| 1      |             | Infant Mental Health and Early Environments        | 3                |
| 2      |             | CBT with Children and Adolescents                  | 3                |
| 3      |             | Art and Play Therapy with Children and Adolescents | 3                |
| 4      |             | Internship                                         | 3                |
|        |             |                                                    | <b>12</b>        |

**Coursework = 21 Credit Hours**  
**Internship = 03 Credit Hours**  
**Total = 24 Credit Hours**



# BAHRIA School of Engineering & Applied Sciences

## Department of Computer Engineering

### Programs offered:

- Bachelor of Computer Engineering (BCE)
- Master of Computer Engineering (MS-CE)
- PhD (Computer Engineering)

**Vision:** The Computer Engineering Department is committed to prepare students for professional and research activities with an ability to learn independently, within a diverse multi-cultural environment, and enabling them to become global leaders in their respective fields.

**Mission:** The mission of Bachelor of Computer Engineering program is to produce ethically sound and technically competent graduates who can fulfill the evolving needs of academia, industry, and society.

**Bachelor of Computer Engineering:** The Department of Computer Engineering at Bahria University is home to multidisciplinary research and academic units that address issues and recent advances in Computer Engineering. The department provides research areas and cutting-edge facilities in Computer engineering. Our Goal has been, and continues to be, to provide a high degree quality program in Computer and Software Engineering, a program that prepares students for lifelong learning as they take on professional careers in computing.

### Eligibility Criteria:

Passed intermediate examination or its equivalent with a minimum of 60% marks in Pre-Engineering Group, or with Mathematics, Physics and Computer Studies.

**Regular Program Duration:** 4 Years, 8 Semesters

**Program Timing:** Morning

Scheme of Study for Bachelor of Computer Engineering

### Objectives of the Degree Program

Graduates of Computer Engineering Program are expected to achieve the following Program Educational Objectives for BCE program.



**PEO 1:** Demonstrate excellence in the profession through in-depth knowledge and skills in the field of Computer Engineering.

**PEO 2:** Demonstrate effective management and communication skills being an individual or a team member.

**PEO 3:** MShow professional integrity and commitment to social and ethical responsibilities.

**PEO 4:** Engage in continuous professional development for their personal growth and the betterment of society.

### **Learning outcome of the Degree Program**

The Computer Engineering program prepares students to attain the program educational objectives by ensuring that students demonstrate achievement of the following graduate attributes.

**PLO 1:** Engineering Knowledge: An ability to apply knowledge of mathematics, computer engineering fundamentals and computer engineering specialization to the solution of complex engineering problems.

**PLO 2:** Problem Analysis: An ability to identify, formulate, research literature and analyze complex computer engineering problems reaching substantiated conclusions using engineering and natural sciences principles.

**PLO 3:** Design/Development of Solutions: An ability to design solutions for complex computer engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health & safety, cultural, societal, and environmental considerations.

**PLO 4:** Investigation: An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

**PLO 5:** Modern Tool Usage: An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

**PLO 6:** The Engineer and Society: An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and



solution to complex engineering problems.

**PLO 7:** Environment and Sustainability: An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

**PLO 8:** Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

**PLO 9:** Individual and Team Work: An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

**PLO 10:** Communication: Ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PLO 11:** Project Management: Ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

**PLO 12:** Lifelong Learning: Ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

## ROADMAP

### Semester 1

| Sr. No. | Pre-requisite Course Code | Course Code      | Course Title                           | Credit Hours |
|---------|---------------------------|------------------|----------------------------------------|--------------|
| 1       | None                      | GSC 110          | Applied Calculus & Analytical Geometry | 3            |
| 2       | None                      | ISL 101 /HSS 116 | Islamic Studies / Ethics               | 2            |
| 3       | None                      | CSC 110          | Computing Fundamentals                 | 2            |
| 4       | None                      | CSL 110          | Computing Fundamentals Lab             | 1            |
| 5       | None                      | GSC 113          | Applied Physics                        | 3            |

## Semester 1

| Sr. No.            | Pre-requisite Course Code | Course Code      | Course Title                           | Credit Hours   |
|--------------------|---------------------------|------------------|----------------------------------------|----------------|
| 1                  | None                      | GSC 110          | Applied Calculus & Analytical Geometry | 3              |
| 2                  | None                      | ISL 101 /HSS 116 | Islamic Studies / Ethics               | 2              |
| 3                  | None                      | CSC 110          | Computing Fundamentals                 | 2              |
| 4                  | None                      | CSL 110          | Computing Fundamentals Lab             | 1              |
| 5                  | None                      | GSC 113          | Applied Physics                        | 3              |
| 6                  | None                      | GSL 113          | Applied Physics Lab                    | 1              |
| 7                  | None                      | ENG 101          | Functional English                     | 3              |
| 8                  | None                      | EEL 112          | Workshop Practices                     | 1              |
| 9                  | None                      | ISL 107          | Tajweed                                | 1 Contact Hour |
| Total Credit Hours |                           |                  |                                        | 16             |

\*Only for Muslim students

## Semester 2

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title     | Credit Hours |
|---------|---------------------------|-------------|------------------|--------------|
| 1       | None                      | GSC 120     | Linear Algebra   | 2            |
| 2       | GSC 113                   | CEN 121     | Circuit Analysis | 3            |

|                           |         |         |                                       |                |
|---------------------------|---------|---------|---------------------------------------|----------------|
| 3                         | GSC 113 | CEL 121 | Circuit Analysis Lab                  | 1              |
| 4                         | None    | CSC 113 | Computer Programming                  | 3              |
| 5                         | None    | CSL 113 | Computer Programming Lab              | 1              |
| 6                         | None    | PAK 103 | Pakistan Studies & Global Perspective | 2              |
| 7                         | None    | ENV 101 | Occupational Health & Safety          | 1              |
| 8                         | None    | CEN 120 | Digital Logic Design                  | 3              |
| 9                         | None    | CEL 120 | Digital Logic Design Lab              | 1              |
| 10                        | None    | ISL 108 | Understanding Quran -I                | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                       | <b>17</b>      |

\*Only for Muslim students

### Semester 3

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                      | Credit Hours |
|---------|---------------------------|-------------|-----------------------------------|--------------|
| 1       | None                      | CSC 115     | Discrete Structures               | 3            |
| 2       | GSC 113                   | EEN 224     | Electronic Devices & Circuits     | 3            |
| 3       | GSC 113                   | EEL 224     | Electronic Devices & Circuits Lab | 1            |
| 4       | CSC 113                   | CSC 210     | Object Oriented Programming       | 3            |
| 5       | CSC 113                   | CSL 210     | Object Oriented Programming Lab   | 1            |

|                           |         |         |                                |                |
|---------------------------|---------|---------|--------------------------------|----------------|
| 6                         | None    | HSS 118 | Communication Skills           | 2              |
| 7                         | GSC 110 | GSC 220 | Complex Variables & Transforms | 3              |
| 8                         |         |         | Social Science Elective-I      | 2              |
| 9                         | ISL 108 | ISL 109 | Understanding Quran -II        | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                | <b>18</b>      |

\*Only for Muslim students

#### Semester 4

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                     | Credit Hours |
|---------|---------------------------|-------------|----------------------------------|--------------|
| 1       | GSC 110                   | GSC 210     | Differential Equations           | 3            |
| 2       | CSC 210                   | CSC 221     | Data Structures & Algorithms     | 3            |
| 3       | CSC 210                   | CSL 221     | Data Structures & Algorithms Lab | 1            |
| 4       | None                      | EEN 313     | Signals & Systems                | 3            |
| 5       | None                      | EEL 313     | Signals & Systems Lab            | 1            |
| 6       | CEN 120                   | CEN 321     | Microprocessors & Interfacing    | 3            |

|                           |         |         |                                   |                |
|---------------------------|---------|---------|-----------------------------------|----------------|
| 7                         | CEN 120 | CEL 321 | Microprocessors & Interfacing Lab | 1              |
| 8                         | -       | -       | MS-Elective-I                     | 3              |
| 9                         | ISL 109 | ISL 110 | Understanding Quran -III          | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                   | <b>18</b>      |

\*Only for Muslim students

### Semester 5

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                             | Credit Hours |
|---------|---------------------------|-------------|------------------------------------------|--------------|
| 1       | CSC 221                   | CSC 320     | Operating Systems                        | 3            |
| 2       | CSC 221                   | CSL 320     | Operating Systems Lab                    | 1            |
| 3       | ENG 105                   | HSS 321     | Technical Writing                        | 2            |
| 4       | CEN 120                   | CEN 221     | Computer Architecture & Organization     | 3            |
| 5       | CEN 120                   | CEL 221     | Computer Architecture & Organization Lab | 1            |
| 6       | EEN 313                   | EEN 325     | Digital Signal Processing                | 3            |
| 7       | EEN 313                   | EEL 325     | Digital Signal Processing Lab            | 1            |
| 8       | None                      | CEN 223     | Computer Communication & Networks        | 3            |

|                           |         |         |                                       |                |
|---------------------------|---------|---------|---------------------------------------|----------------|
| 9                         | None    | CEL 223 | Computer Communication & Networks Lab | 1              |
| 10                        | ISL 110 | ISL 111 | Understanding Quran-IV                | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                       | <b>18</b>      |

\*Only for Muslim students

### Semester 6

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                    | Credit Hours   |
|---------------------------|---------------------------|-------------|---------------------------------|----------------|
| 1                         | -                         | -           | CEDE-I                          | 3+1            |
| 2                         | CSC 210                   | CSC 220     | Database Management Systems     | 3              |
| 3                         | CSC 210                   | CSL 220     | Database Management Systems Lab | 1              |
| 4                         | None                      | SEN 220     | Software Engineering            | 3              |
| 5                         | None                      | GSC 122     | Probability & Statistics        | 3              |
| 6                         | -                         | -           | MDEE-I                          | 3+0/2+1        |
| 7                         | ISL 111                   | ISL 112     | Understanding Quran – V         | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                 | <b>17</b>      |

\*Only for Muslim students

## Semester 7

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title              | Credit Hours   |
|---------------------------|---------------------------|-------------|---------------------------|----------------|
| 1                         | CEN 221                   | CEN 442     | Digital System Design     | 3              |
| 2                         | CEN 221                   | CEL 442     | Digital System Design Lab | 1              |
| 3                         | -                         | -           | MS-Elective-II            | 2              |
| 4                         | -                         | -           | CEDE-II                   | 3+1            |
| 5                         | -                         | ESC 498     | Project-I                 | 3              |
| 6                         | GSC 120                   | GSC 321     | Numerical Analysis        | 2              |
| 7                         | GSC 120                   | GSL 321     | Numerical Analysis Lab    | 1              |
| 8                         | None                      | ISL 113     | Seerah – I                | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                           | <b>16</b>      |

\*Only for Muslim students

## Semester 8

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title | Credit Hours |
|---------|---------------------------|-------------|--------------|--------------|
| 1       | -                         | ESC 499     | Project-II   | 3            |
| 2       | -                         | -           | CEDE-III     | 3+1          |

|                           |         |         |                            |                |
|---------------------------|---------|---------|----------------------------|----------------|
| 3                         | -       | -       | CEDE-IV                    | 3+1            |
| 4                         | -       | -       | MDEE-II                    | 3+0/2+1        |
| 5                         | -       | -       | Social Science Elective-II | 2              |
| 6                         | ISL 113 | ISL 114 | Seerah – II                | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                            | <b>16</b>      |

\*Only for Muslim students

### List of Elective Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                             | Credit Hours |
|---------|---------------------------|-------------|------------------------------------------|--------------|
| 1       | None                      | SEN 320     | Human Computer Interaction               | 3            |
| 2       | None                      | CEN 429     | Introduction to Block Chain Technologies | 3            |
| 3       | None                      | CSC 449     | Neural Networks & Fuzzy Logic            | 3            |
| 4       | EEN 313                   | CEN 458     | Robotics                                 | 2+1          |
| 5       | None                      | CEN 426     | Introduction to Virtual Reality          | 3            |
| 6       | None                      | SEN 420     | Software Quality Assurance               | 3            |



|    |         |         |                                          |     |
|----|---------|---------|------------------------------------------|-----|
| 7  | EEN 224 | CEN 457 | VLSI Design                              | 2+1 |
| 8  | None    | CSC 457 | Data Mining & Warehousing                | 2+1 |
| 9  | None    | GEO 437 | GIS & Remote Sensing                     | 3   |
| 10 | None    | GEO 436 | Health Safety & Environment              | 3   |
| 11 | None    | CEN 427 | Biomedical Engineering                   | 3   |
| 12 | None    | SEN 449 | Business Process Automation              | 3   |
| 13 | None    | EEN 467 | Control Engineering                      | 3   |
| 14 | None    | SEN 448 | Software Applications and Mobile Devices | 2+1 |
| 15 | SEN 220 | CSC 323 | Compiler Construction                    | 3   |
| 16 | SEN 220 | CSC 315 | Theory of Automata                       | 3   |
| 17 | CSC 320 | CEN 411 | Cloud & Distributed Computing            | 3+1 |
| 18 | CEN 321 | CEN 449 | Internet of Things                       | 3+1 |

|    |         |         |                                            |     |
|----|---------|---------|--------------------------------------------|-----|
| 19 | CEN 321 | CEN 440 | Embedded System Design                     | 3+1 |
| 20 | EEN 313 | CEN 409 | Artificial Intelligence & Machine Learning | 3+1 |
| 21 | EEN 313 | CEN 444 | Digital Image Processing                   | 3+1 |
| 22 | CSC 113 | CEN 408 | System & Network Security                  | 3+1 |
| 23 | CSC 320 | CEN 454 | System Programming                         | 3+1 |
| 24 | CSC 320 | CEN 407 | High Performance Computing                 | 3+1 |
| 25 | CSC 221 | CEN 326 | Algorithm Design and Analysis              | 3+1 |
| 26 | EEN 325 | CEN 425 | Hardware Design for DSP & ML               | 3+1 |
| 27 | CEN 442 | CEN 462 | Hardware Verification                      | 3+1 |
| 28 | None    | EMG 201 | Engineering Project Management             | 3   |
| 29 | None    | MGT 423 | Engineering Management                     | 3   |
| 30 | None    | MTM 101 | Introduction to Maritime Industry          | 3   |
| 31 | None    | EMG 222 | Principles of Management                   | 2   |



|    |      |         |                         |   |
|----|------|---------|-------------------------|---|
| 32 | None | HSS 423 | Entrepreneurship        | 2 |
| 33 | None | HSS 412 | Engineering Economics   | 2 |
| 34 | None | HSS 413 | Sociology for Engineers | 2 |
| 35 | None | HSS 424 | Engineering Ethics      | 2 |
| 36 | None | HSS 541 | Organizational Behavior | 2 |

## Master of Science Computer Engineering MS (CE)

**Campus:** Islamabad

**Regular Program Duration:** 2 Years 4 Semesters

**Program Timing:** Evening

**Entry Requirements:**

16 years' education CGPA > 2.0 Additionally, applicants must provide HEC verification of all academic certificates / degrees.

**Objectives of the Degree Program**

The objectives of the program are to enhance the student's ability to be successful individual and advance their chosen careers in industry, academia, and public institution, hence making significant contributions to the national growth. In department of Computer Engineering, We are offering specializations in a wide range of related field like: Computer Vision, Machine Learning, Neural Networks, Advanced Computer Architecture, Wireless and Advanced Network Systems and embedded system etc. To fulfill post graduate research and academic endeavors in this wide range of specializations, the students can also avail the highly competent and top notch faculty from other sister engineering departments of the university.

### Semester 1

| S.No.                     | Course Code | Course Title         | Credit Hours |
|---------------------------|-------------|----------------------|--------------|
| 1                         |             | Core-I               | 3            |
| 2                         |             | Core-II              | 3            |
| 3                         | ESC 701     | Research Methodology | 3            |
| <b>Total Credit Hours</b> |             |                      | <b>9</b>     |

### Semester 2

| S.No.                     | Course Code | Course Title | Credit Hours |
|---------------------------|-------------|--------------|--------------|
| 1                         |             | Core-III     | 3            |
| 2                         |             | Elective -I  | 3            |
| 3                         |             | Elective -II | 3            |
| <b>Total Credit Hours</b> |             |              | <b>9</b>     |

### Semester 3

| S.No.                     | Course Code | Course Title             | Credit Hours |
|---------------------------|-------------|--------------------------|--------------|
| 1                         |             | Elective -III            | 3            |
| 2                         |             | Elective -IV / Thesis- I | 3            |
| <b>Total Credit Hours</b> |             |                          | <b>6</b>     |

#### Semester 4

| S. No.                    | Course Code | Course Title              | Credit Hours |
|---------------------------|-------------|---------------------------|--------------|
| 1                         |             | Elective -V               | 3            |
| 2                         |             | Elective -VI / Thesis- II | 3            |
| <b>Total Credit Hours</b> |             |                           | <b>6</b>     |

#### Core Courses

| S. No.                    | Course Code | Course Title                             | Credit Hours |
|---------------------------|-------------|------------------------------------------|--------------|
| 1                         | CEN 525     | Digital Signal Processing & Applications | 3            |
| 2                         | CEN 520     | Advanced Computer System Architecture    | 3            |
| 3                         | CEN 624     | Advanced Digital Design                  | 3            |
| <b>Total Credit Hours</b> |             |                                          | <b>9</b>     |

Elective Courses The elective courses for all the four specializations are listed below. The students opting Thesis option have to choose four courses, while the students following Non-Thesis option have to complete six courses. The elective course offered in each semester is on the discretion of the department.

| S. No. | Course Code | Course Title                         | Credit Hours |
|--------|-------------|--------------------------------------|--------------|
| 1      | CSC 751     | Pattern Recognition                  | 3            |
| 2      | CSC 764     | Computer Vision                      | 3            |
| 3      | CSC 719     | Machine Learning                     | 3            |
| 4      | CSC 711     | Advanced Artificial Intelligence     | 3            |
| 5      | CSC 765     | Bio Medical Image Analysis           | 3            |
| 6      | CEN 745     | Advanced Digital Image Processing    | 3            |
| 7      | CSC 518     | Decision Support Systems             | 3            |
| 8      | CEN 740     | Advanced Embedded Systems            | 3            |
| 9      | CSC 720     | Advanced Operating Systems           | 3            |
| 10     | CEN 707     | Advanced Distributed Systems         | 3            |
| 11     | CEN 553     | Real Time Computer Systems           | 3            |
| 12     | CSC 758     | Parallel Processing                  | 3            |
| 13     | CEN 752     | Advanced VLSI System Design          | 3            |
| 14     | CEN 541     | ASIC and FPGA Design                 | 3            |
| 15     | CEN 721     | Advanced Microprocessor Systems      | 3            |
| 16     | CEN 753     | Design of Real Time Embedded Systems | 3            |
| 17     | CSC 502     | Information Systems                  | 3            |



|    |         |                                              |   |
|----|---------|----------------------------------------------|---|
| 18 | EET 710 | Advanced Computer Networks                   | 3 |
| 19 | EET 511 | Digital Communication Systems                | 3 |
| 20 | EET 556 | Mobile Communication & Networking            | 3 |
| 21 | EET 548 | Mobile Cellular Systems and Standards        | 3 |
| 22 | EET 554 | Wireless Networks                            | 3 |
| 23 | EET 755 | Wireless Communication Techniques            | 3 |
| 24 | EET 555 | Wireless and Mobile Communications           | 3 |
| 25 | EET 702 | Advanced Network Security                    | 3 |
| 26 | EET 553 | Information Theory and Coding                | 3 |
| 27 | EET 519 | Distributed Networking                       | 3 |
| 28 | EET 520 | Network Administration & Management          | 3 |
| 29 | EET 706 | Advanced Optical Fiber Networks              | 3 |
| 30 | EET 711 | Advanced Digital Communications              | 3 |
| 31 | EET 769 | Mobile/Vehicular Ad Hoc Networks             | 3 |
| 32 | GSC 700 | Advanced Engineering Mathematics             | 3 |
| 33 | EEN 510 | Stochastic Processes                         | 3 |
| 34 | CSC 704 | Advanced Cryptography                        | 3 |
| 35 | SEN 762 | Advanced Big Data Analytics                  | 3 |
| 36 | DSC 707 | Deep Learning                                | 3 |
| 37 | CSC 781 | Cloud Computing                              | 3 |
| 38 | ISC 737 | Computer and Network Forensics               | 3 |
| 39 | SEN 774 | IoT's Architecture, Protocols & Applications | 3 |

**\*These courses may be undertaken for a given specialization**

## PhD Computer Engineering (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

18 year of education (MS/MPHIL/equivalent degree) in relevant discipline from an HEC recognized university with a minimum CGPA of 3.00/4.00 (Semester System) or 60% marks (Annual System).

NTS-GAT (Subject) or GRE (Subject) Test passed with minimum 60% marks or BU Admission Test (70% passing marks).

Initial Research Proposal/Statement of Purpose is required at the time of PhD admission.

## ROADMAP

### Semester 1

| Sr.# | Course Code | Course Title                    | Credit Hours |
|------|-------------|---------------------------------|--------------|
| 1    | ESC 801     | Research Methods in PhD Studies | 3            |
| 2    |             | Elective I                      | 3            |
| 3    |             | Elective II                     | 3            |

### Semester 2

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    |             | Elective III | 3            |
| 2    |             | Elective IV  | 3            |
| 3    |             | Elective V   | 3            |

### Semester 3

| Sr.# | Course Code | Course Title       | Credit Hours |
|------|-------------|--------------------|--------------|
| 1    |             | Comprehensive exam | 0            |
| 2    | THS 900     | PhD Thesis         | 9            |

### Semester 4

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

### Semester 5

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

### Semester 6

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

### List of Electives Courses

| Sr.# | Course Code | Course Title                                          | Credit Hours |
|------|-------------|-------------------------------------------------------|--------------|
| 1    | CEN 807     | Distributed Systems Architecture and Design           | 3            |
| 2    | CEN 808     | Advanced Techniques in System Modeling and Simulation | 3            |
| 3    | CEN 821     | Microprocessor System Optimization and customization  | 3            |
| 4    | CEN 840     | Advanced Embedded System Design                       | 3            |
| 5    | CEN 842     | Digital Systems Integration and Design                | 3            |



|    |         |                                                |   |
|----|---------|------------------------------------------------|---|
| 6  | CEN 845 | Image Analysis and Pattern Recognition         | 3 |
| 7  | CEN 852 | Modern Approaches in VLSI System Design        | 3 |
| 8  | CEN 853 | Real-Time Systems Engineering & Design         | 3 |
| 9  | CEN 855 | Advanced Parallel Processing Computer Systems  | 3 |
| 10 | DSC 807 | Advanced Deep Learning                         | 3 |
| 11 | CSC 820 | Advanced Topics in Operating Systems           | 3 |
| 12 | CSC 819 | Research Trends in Machine Learning            | 3 |
| 13 | CSC 851 | Advanced Pattern Recognition                   | 3 |
| 14 | CSC 864 | Advanced Computer Vision                       | 3 |
| 15 | CSC 881 | Advanced Cloud Computing                       | 3 |
| 16 | SEN 820 | Emerging Trends in Human Computer Interaction  | 3 |
| 17 | SEN 862 | Emerging Trends in Big Data Analytics          | 3 |
| 18 | EET 827 | Advanced Wireless Communication Systems        | 3 |
| 19 | EET 831 | Modern Digital Communications Systems          | 3 |
| 20 | EET 832 | Advance topics in Network Security             | 3 |
| 21 | EET 834 | Emerging Trend in Optical Fiber                | 3 |
| 22 | EET 835 | Advance Topics in 5G and Beyond Communications | 3 |

|    |         |                                                                  |   |
|----|---------|------------------------------------------------------------------|---|
| 23 | EET 850 | Wireless Sensor Networks                                         | 3 |
| 24 | EET 851 | Mobile and ad-hoc Networks                                       | 3 |
| 25 | EEN 824 | On-Chip Interconnection Networks                                 | 3 |
| 26 | EEN 829 | Design and Applications of Real Time DSP Systems                 | 3 |
| 27 | EEN 831 | Statistical Signal Processing                                    | 3 |
| 28 | CSC 800 | Advanced AI Networking                                           | 3 |
| 29 | CEN 820 | High Performance Computer Architecture                           | 3 |
| 30 | CEN 854 | MOS VLSI Circuit Design                                          | 3 |
| 31 | EET 836 | AI for Future Communication Systems                              | 3 |
| 32 | EET 837 | Advanced Data Communication Systems                              | 3 |
| 33 | EET 829 | Optimization Techniques                                          | 3 |
| 34 | CSC 841 | Advanced Computational Linguistics                               | 3 |
| 35 | CSC 860 | Advanced Complexity Theory and Algorithms                        | 3 |
| 36 | DSC 800 | Advanced Data Analytics                                          | 3 |
| 37 | DSC 802 | Advanced Data Visualization                                      | 3 |
| 38 | SEN 810 | Secure Software Systems                                          | 3 |
| 39 | SEN 808 | Computer and Cybersecurity                                       | 3 |
| 40 | SEN 809 | Internet of Things: Design and Applications                      | 3 |
| 41 | EEN 832 | Fuzzy Logic and Neural Network Based Intelligent control systems | 3 |



|    |         |                                       |   |
|----|---------|---------------------------------------|---|
| 42 | EEN 833 | Advanced Computer vision for Robotics | 3 |
| 43 | EEN 834 | Human-Robot Interaction               | 3 |
| 44 | EEN 835 | Medical Devices & Robotics            | 3 |
| 45 | CEN 841 | ASIC Design Methodology               | 3 |

### **List of Deficiency Courses**

Deficiency courses can be selected from 700-level courses of MS CE Roadmap, as recommended by the Admission Committee.

### **Research Themes of Computer Engineering**

Computer Engineering programs expose scholars to the complete life-cycle of computer application development including abstraction, modeling and algorithm development and leveraging computer systems.

### **The potential research themes / areas are as follows:**

- Data Mining
- Expert Systems and artificial Intelligence
- Digital Signal Processing & communication
- Multimedia Signal Processing
- Image Processing and Pattern Recognition
- Robotics
- Information & Communication
- Optical and Wireless Communications
- Internet Technologies
- Ad-Hoc and Mobile Communications
- Wireless Sensor Networks
- Concurrent, Distributed and Parallel Computing
- System Modeling and Simulation
- Soft Computing
- Optimization Algorithms
- Embedded Systems
- VLSI & Digital System Design
- Cloud Computing
- Antenna & Electromagnetic
- Bioinformatics



## DEPARTMENT OF SOFTWARE ENGINEERING

### Bachelor of Software Engineering (BSE)

**Campuses:** Islamabad and Karachi

**Regular Programme Duration:** 4 Years, 8 Semesters

**Available Specialization:** None

**Programme Timing:** Morning

**PEO-1:** Graduates should demonstrate competence in applying Software Engineering principles & practices in various phases of software/system development life cycle in their respective professional career.

**PEO-2:** Graduates should demonstrate effective team member or leadership skills with strong managerial skills and a sound sense of social responsibility for the sustainable development of society.

**PEO-3:** Graduates should demonstrate sustained career development and progression through ethical engineering practices, effective communication skills and continuous learning.

#### **Programme Mission:**

The mission of Bachelor of Software Engineering Programme is to prepare technically strong Software Engineers who can contribute effectively towards the nation, society and the world at large through effective problem solving skills, application of engineering knowledge, leadership and healthy lifelong learning attitude.

#### **Programme Learning Outcomes (PLOs):**

1. **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** An ability to design solutions for complex



engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4. **Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
5. **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.
6. **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
7. **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
9. **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.
10. **Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.
12. **Lifelong Learning:** An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

## Scheme of Studies

|                                     |                                         |
|-------------------------------------|-----------------------------------------|
| Duration                            | 4 years                                 |
| Number of Semesters                 | 8                                       |
| Number of weeks per semester        | 18 (16 for teaching and 2 for exams)    |
| Total number of credit hours        | 134                                     |
| Number of credit hours per semester | 15-18                                   |
| Non-Engineering Courses             | 14 Courses, 36 Cr Hrs, 26.87 % of total |
| Engineering Courses                 | 31 Courses, 98 Cr Hrs, 73.13 % of total |

## Courses of Non-Engineering Domain

| Knowledge Area                        | Sub Area        | Name of Course                          | Lec. Cr. Hrs | Lab Cr. Hrs | Total Cr. Hrs. | Total Courses | Total Credits | % Area  | % Overall |
|---------------------------------------|-----------------|-----------------------------------------|--------------|-------------|----------------|---------------|---------------|---------|-----------|
| <b>Humanities and Social Sciences</b> | English         | Functional English                      | 3            | 0           | 3              | 3             | 8             | 22.22 % | 5.97%     |
|                                       |                 | Effective Communication Skills          | 2            | 0           | 2              |               |               |         |           |
|                                       |                 | Technical Writing & Presentation Skills | 3            | 0           | 3              |               |               |         |           |
|                                       | Culture         | Islamic Studies/Ethics                  | 2            | 0           | 2              | 2             | 4             | 11.11 % | 2.99%     |
|                                       |                 | Pakistan Studies and Global Perspective | 2            | 0           | 2              |               |               |         |           |
|                                       | Social Sciences | Social Sciences Elective 1              | 2            | 0           | 2              | 2             | 4             | 11.11 % | 2.99%     |
|                                       |                 | Social Sciences Elective 2              | 2            | 0           | 2              |               |               |         |           |

|                     |         |                                        |    |   |    |    |    |        |        |
|---------------------|---------|----------------------------------------|----|---|----|----|----|--------|--------|
| Management Sciences |         | Management Sciences Elective 1         | 3  | 0 | 3  | 2  | 5  | 13.89% | 3.73%  |
|                     |         | Management Sciences Elective 2         | 2  | 0 | 2  |    |    |        |        |
| Natural Sciences    | Math    | Applied Calculus & Analytical Geometry | 3  | 0 | 3  | 4  | 12 | 33.33% | 8.96%  |
|                     |         | Linear Algebra                         | 3  | 0 | 3  |    |    |        |        |
|                     |         | Probability & Statistics               | 3  | 0 | 3  |    |    |        |        |
|                     |         | Numerical Analysis                     | 2  | 1 | 3  |    |    |        |        |
|                     | Physics | Applied Physics                        | 2  | 1 | 3  | 1  | 3  | 8.33%  | 2.24%  |
| Total               |         |                                        | 34 | 2 | 36 | 14 | 36 | 100%   | 26.87% |

### Courses of Engineering Domain

| Knowledge Area                         | Course Title                         | Lec | Lab | Total | Total Courses | Total Cr. Hrs. | % Area | % Overall |
|----------------------------------------|--------------------------------------|-----|-----|-------|---------------|----------------|--------|-----------|
| Computing and Information Sciences     | Computing Fundamentals               | 2   | 1   | 3     | 2             | 7              | 7.14%  | 5.22%     |
|                                        | Computer Programming                 | 3   | 1   | 4     |               |                |        |           |
| Core Breadth of Engineering discipline | Introduction to Software Engineering | 3   | 0   | 3     | 10            | 30             | 30.61% | 22.39%    |
|                                        | Software Requirement Engineering     | 3   | 0   | 3     |               |                |        |           |
|                                        | Design and Analysis of Algorithms    | 3   | 0   | 3     |               |                |        |           |
|                                        | Software Design &                    | 2   | 1   | 3     |               |                |        |           |

|                                             |                                        |   |   |   |   |    |        |        |
|---------------------------------------------|----------------------------------------|---|---|---|---|----|--------|--------|
|                                             | Architecture                           |   |   |   |   |    |        |        |
|                                             | Software Construction                  | 2 | 1 | 3 |   |    |        |        |
|                                             | Software Quality Engineering           | 3 | 0 | 3 |   |    |        |        |
|                                             | Human Computer Interaction             | 3 | 0 | 3 |   |    |        |        |
|                                             | Cloud Computing                        | 2 | 1 | 3 |   |    |        |        |
|                                             | Software Project Management            | 3 | 0 | 3 |   |    |        |        |
|                                             | Information Security                   | 3 | 0 | 3 |   |    |        |        |
| <b>Core Depth of Engineering discipline</b> | Engineering Elective-I*                | - | - | 3 | 6 | 18 | 18.37% | 13.43% |
|                                             | Engineering Elective-II*               | - | - | 3 |   |    |        |        |
|                                             | Engineering Elective-III*              | - | - | 3 |   |    |        |        |
|                                             | Engineering Elective-IV*               | - | - | 3 |   |    |        |        |
|                                             | Engineering Elective-V*                | - | - | 3 |   |    |        |        |
|                                             | Engineering Elective-VI*               | - | - | 3 |   |    |        |        |
| <b>Engineering Foundation</b>               | Discrete Structures                    | 3 | 0 | 3 | 8 | 30 | 30.61% | 22.39% |
|                                             | Object Oriented Programming            | 3 | 1 | 4 |   |    |        |        |
|                                             | Computer Architecture and Logic Design | 3 | 1 | 4 |   |    |        |        |
|                                             | Operating Systems                      | 3 | 1 | 4 |   |    |        |        |
|                                             | Database Management System             | 3 | 1 | 4 |   |    |        |        |
|                                             | Computer Communication & Networks      | 3 | 1 | 4 |   |    |        |        |

|                                               |                                        |   |   |   |    |    |       |        |
|-----------------------------------------------|----------------------------------------|---|---|---|----|----|-------|--------|
|                                               | Formal Methods in Software Engineering | 3 | 0 | 3 |    |    |       |        |
|                                               | Data Structures & Algorithms           | 3 | 1 | 4 |    |    |       |        |
| <b>Multi-Disciplinary Engineering Courses</b> | Occupational Health and Safety         | 1 | 0 | 1 | 3  | 7  | 7.14% | 5.22%  |
|                                               | MDEE-I*                                | - | - | 3 |    |    |       |        |
|                                               | MDEE-II*                               | - | - | 3 |    |    |       |        |
| <b>Senior Design Project</b>                  | Project I                              | 0 | 3 | 3 | 2  | 6  | 6.12% | 4.48%  |
|                                               | Project II                             | 0 | 3 | 3 |    |    |       |        |
| Internship (Summer)                           |                                        | 0 | 0 | 0 | 0  | 0  | 0     | 0      |
| <b>Total</b>                                  |                                        |   |   |   | 31 | 98 | 100%  | 73.13% |

*\*Course is either 2-1-3 or 3-0-3 depending on the offered elective course.*

## Semester wise Roadmap of BSE

### Semester 1

| Pre-requisite Courses | Course Code | Course Title                           | Lec            | Lab                 | Total |
|-----------------------|-------------|----------------------------------------|----------------|---------------------|-------|
| None                  | CSC 110     | Computing Fundamentals                 | 2              | 1                   | 3     |
| None                  | CSC 113     | Computer Programming                   | 3              | 1                   | 4     |
| None                  | ENG 101     | Functional English                     | 3              | 0                   | 3     |
| None                  | GSC 110     | Applied Calculus & Analytical Geometry | 3              | 0                   | 3     |
| None                  | GSC 114     | Applied Physics                        | 2              | 1                   | 3     |
| None                  | ENV 101     | Occupational Health and Safety         | 1              | 0                   | 1     |
| None                  | ISL 107     | Tajweed                                | 1 Contact Hour | Non-Credit course** |       |

Total  
= 17

## Semester 2

| Pre-requisite Courses          | Course Code | Course Title                         | Lec            | Lab                 | Total |
|--------------------------------|-------------|--------------------------------------|----------------|---------------------|-------|
| None                           | CSC 115     | Discrete Structures                  | 3              | 0                   | 3     |
| Computer Programming (CSC 113) | CSC 210     | Object-Oriented Programming          | 3              | 1                   | 4     |
| None                           | SEN 120     | Introduction to Software Engineering | 3              | 0                   | 3     |
| Functional English (ENG 105)   | HSS 134     | Effective Communication Skills       | 2              | 0                   | 2     |
| None                           | ISL 101     | Islamic Studies/Ethics               | 2              | 0                   | 2     |
| None                           | GSC 121     | Linear Algebra                       | 3              | 0                   | 3     |
| ISL 107                        | ISL 108     | Understanding Quran- I               | 1 Contact Hour | Non-Credit course** |       |

Total = 17

## Semester 3

| Pre-requisite Courses                          | Course Code | Course Title                           | Lec | Lab | Total |
|------------------------------------------------|-------------|----------------------------------------|-----|-----|-------|
| Object Oriented Programming (CSC 210)          | CSC 221     | Data Structures & Algorithms           | 3   | 1   | 4     |
| Introduction to Software Engineering (SEN 120) | SEN 211     | Software Requirement Engineering       | 3   | 0   | 3     |
| None                                           | GSC 122     | Probability & Statistics               | 3   | 0   | 3     |
| -                                              | -           | Social Science Elective-I              | 2   | 0   | 2     |
| None                                           | CEN 220     | Computer Architecture and Logic Design | 3   | 1   | 4     |

|         |         |                                         |                |                     |   |
|---------|---------|-----------------------------------------|----------------|---------------------|---|
| None    | PAK 103 | Pakistan Studies and Global Perspective | 2              | 0                   | 2 |
| ISL 108 | ISL 109 | Understanding Quran-II                  | 1 Contact Hour | Non-Credit course** |   |

Total  
= 18

#### Semester 4

| Pre-requisite Courses                            | Course Code | Course Title                      | Lec            | Lab                 | Total |
|--------------------------------------------------|-------------|-----------------------------------|----------------|---------------------|-------|
| Computer Architecture and Logic Design (CEN 220) | CSC 320     | Operating Systems                 | 3              | 1                   | 4     |
| Computer Programming (CSC 113)                   | CSC 220     | Database Management System        | 3              | 1                   | 4     |
| Data Structures & Algorithms (CSC 221)           | CSC 321     | Design and Analysis of Algorithms | 3              | 0                   | 3     |
| Software Requirement Engineering (SEN 211)       | SEN 221     | Software Design & Architecture    | 2              | 1                   | 3     |
| -                                                | -           | Management Science Elective-I     | 3              | 0                   | 3     |
| ISL 109                                          | ISL 110     | Understanding Quran-III           | 1 Contact Hour | Non-Credit course** |       |

Total  
= 17

## Semester 5

| Pre-requisite Courses                            | Course Code | Course Title                           | Lec                  | Lab                    | Total |
|--------------------------------------------------|-------------|----------------------------------------|----------------------|------------------------|-------|
| None                                             | CEN 223     | Computer Communication & Networks      | 3                    | 1                      | 4     |
| Applied Calculus & Analytical Geometry (GSC 110) | SEN 323     | Formal Methods in Software Engineering | 3                    | 0                      | 3     |
| Software Design & Architecture (SEN 221)         | SEN 311     | Software Construction                  | 2                    | 1                      | 3     |
| -                                                | -           | Engineering Elective-I*                | -                    | -                      | 3     |
| -                                                | -           | MDEE-I*                                | -                    | -                      | 3     |
| -                                                | -           | Social Science-II                      | 2                    | 0                      | 2     |
| ISL 110                                          | ISL 111     | Understanding Quran-IV                 | 1<br>Contact<br>Hour | Non-Credit<br>course** |       |

Total  
= 18

## Semester 6

| Pre-requisite Courses                          | Course Code | Course Title                            | Lec            | Lab                 | Total |
|------------------------------------------------|-------------|-----------------------------------------|----------------|---------------------|-------|
| Introduction to Software Engineering (SEN 120) | SEN 321     | Software Quality Engineering            | 3              | 0                   | 3     |
| None                                           | SEN 212     | Human Computer Interaction              | 3              | 0                   | 3     |
| None                                           | HSS 320     | Technical Writing & Presentation Skills | 3              | 0                   | 3     |
| -                                              | -           | Engineering Elective-II*                | -              | -                   | 3     |
| -                                              | -           | Engineering Elective-III*               | -              | -                   | 3     |
| None                                           | SEN 401     | Cloud Computing                         | 2              | 1                   | 3     |
| ISL 111                                        | ISL 112     | Understanding Quran-III                 | 1 Contact Hour | Non-Credit course** |       |

Total  
= 18

## Semester 7

| Pre-requisite Courses                            | Course Code | Course Title                | Lec | Lab | Total |
|--------------------------------------------------|-------------|-----------------------------|-----|-----|-------|
| -                                                | FYP 400     | Final Year Project I        | 0   | 3   | 3     |
| Introduction to Software Engineering (SEN 120)   | SEN 410     | Software Project Management | 3   | 0   | 3     |
| None                                             | CSC 407     | Information Security        | 3   | 0   | 3     |
| Applied Calculus & Analytical Geometry (GSC 110) | GSC 321     | Numerical Analysis          | 2   | 1   | 3     |

|         |         |                                |                   |                     |   |
|---------|---------|--------------------------------|-------------------|---------------------|---|
| -       | -       | Engineering Elective-IV*       | -                 | -                   | 3 |
| -       | -       | Management Science Elective-II | 2                 | 0                   | 2 |
| ISL 112 | ISL 113 | Seerah-I                       | 1<br>Contact Hour | Non-Credit course** |   |

Total  
= 17

### Semester 8

| Pre-requisite Courses | Course Code | Course Title             | Lec               | Lab                 | Total |
|-----------------------|-------------|--------------------------|-------------------|---------------------|-------|
| -                     | FYP 400     | Final Year Project II    | 0                 | 3                   | 3     |
| -                     | -           | Engineering Elective-V*  | -                 | -                   | 3     |
| -                     | -           | Engineering Elective-VI* | -                 | -                   | 3     |
| -                     | -           | MDEE-II*                 | -                 | -                   | 3     |
| ISL 113               | ISL 114     | Seerah-II                | 1<br>Contact Hour | Non-Credit course** |       |

Total  
= 12

\*Course is either 2-1-3 or 3-0-3 depending on the offered elective course.

\*\*Only for Muslim students

## Humanities and Social Sciences & Management Science Electives

| Pre-Req                               | Course Code | Course Title Total                      | Credit Hours | Theory | Lab |
|---------------------------------------|-------------|-----------------------------------------|--------------|--------|-----|
| <b>Humanities and Social Sciences</b> |             |                                         |              |        |     |
| None                                  | HSS 217     | Introduction to Sociology               | 2            | 2      | 0   |
| None                                  | HSS 119     | Introduction to International Relations | 2            | 2      | 0   |
| None                                  | HSS 121     | Introduction to Media Studies           | 2            | 2      | 0   |
| None                                  | HSS 218     | Introduction to Anthropology            | 2            | 2      | 0   |
| None                                  | HSS 541     | Organizational Behavior                 | 2            | 2      | 0   |
| None                                  | PSY 102     | Introduction to Psychology              | 2            | 2      | 0   |
| None                                  | HSS 413     | Sociology for Engineers                 | 2            | 2      | 0   |
| None                                  | SEN 442     | Software Engineering Economics          | 3            | 3      | 0   |
| None                                  | ENG 121     | English Literature                      | 3            | 3      | 0   |
| None                                  | HSS 462     | Foreign Language                        | 3            | 3      | 0   |
| None                                  | HSS 463     | Accounting & Finance                    | 3            | 3      | 0   |
| <b>Management Science</b>             |             |                                         |              |        |     |
| None                                  | HSS 423     | Entrepreneurship                        | 2            | 2      | 0   |
| None                                  | MGT 111     | Principles of Management                | 3            | 3      | 0   |
| None                                  | HSS 453     | Human Resource Management               | 3            | 3      | 0   |
| None                                  | MGT 423     | Engineering Management                  | 3            | 3      | 0   |
| None                                  | MTM 101     | Introduction to Maritime Industry       | 3            | 3      | 0   |

## Multi-Disciplinary Engineering Elective (MDEE) Courses

| Pre-Req | Course Code | Course Title Total               | Credit Hours | Theory | Lab |
|---------|-------------|----------------------------------|--------------|--------|-----|
| GSC 110 | GSC 210     | Differential Equations           | 3            | 3      | 0   |
| GSC 110 | GSC 220     | Complex Variables and Transforms | 3            | 3      | 0   |
| GSC 122 | GSC 445     | Operations Research              | 3            | 3      | 0   |
| GSC 122 | CEN 450     | Simulation and Modeling          | 3            | 2      | 1   |
| GSC 114 | GSC 446     | Physics-II (Mechanics)           | 3            | 3      | 0   |
| GSC 122 | GSC 440     | Stochastic Processes             | 3            | 3      | 0   |
| CSC 320 | CEN 449     | System Programming               | 3            | 2      | 1   |
| CSC 320 | CEN 453     | Real Time Systems                | 3            | 3      | 0   |
| CSC 315 | CSC 323     | Compiler Construction            | 3            | 2      | 1   |
| GSC 110 | CSC 453     | Information Theory               | 3            | 3      | 0   |
| CSC 113 | SEN 460     | IoT Application Development      | 3            | 2      | 1   |
| None    | CEN 122     | Digital Design                   | 3            | 2      | 1   |
| None    | CSC 448     | Introduction to Bio-Informatics  | 3            | 3      | 0   |
| None    | CEN 463     | Robotics                         | 3            | 2      | 1   |
| None    | CSC 315     | Theory of Automata               | 3            | 3      | 0   |
| None    | CEN 439     | Embedded System Design           | 3            | 2      | 1   |
| None    | SEN 429     | Fault-Tolerant Systems           | 3            | 3      | 0   |
| None    | SEN 449     | Business Process Automation      | 3            | 3      | 0   |
| None    | HSS 422     | Engineering Ethics               | 3            | 3      | 0   |

## Engineering Electives

\*At least 2 courses with lab components will be offered

| Pre-Req | Course Code | Course Title Total                          | Credit Hours | Theory | Lab |
|---------|-------------|---------------------------------------------|--------------|--------|-----|
| CSC 113 | CSC 313     | Visual Programming                          | 3            | 2      | 1   |
| CSC 113 | CSC 445     | Principles of Programming Languages         | 3            | 3      | 0   |
| CSC 210 | SEN 328     | Game Application Development                | 3            | 2      | 1   |
| CSC-113 | SEN 441     | Mathematical Tools For Software Engineering | 3            | 3      | 0   |
| GSC 122 | CSC 441     | Natural Language Processing                 | 3            | 3      | 0   |
| CSC 210 | CSC 456     | Distributed Computing                       | 3            | 2      | 1   |
| CSC 220 | CSC 460     | Data Mining                                 | 3            | 2      | 1   |
| CSC 220 | CSC 454     | Data Warehousing                            | 3            | 3      | 0   |
| SEN 120 | CSC 458     | Management Information Systems              | 3            | 3      | 0   |
| CSC 220 | SEN 326     | Advanced Database Management Systems        | 3            | 2      | 1   |
| CSC 220 | SEN 327     | Distributed Database Systems                | 3            | 3      | 0   |
| GSC 121 | CEN 445     | Digital Image Processing                    | 3            | 2      | 1   |
| CEN 445 | CSC 464     | Computer Vision                             | 3            | 3      | 0   |
| SEN 120 | SEN 335     | Object Oriented Software Engineering        | 3            | 2      | 1   |

|         |         |                                          |   |   |   |
|---------|---------|------------------------------------------|---|---|---|
| SEN 311 | SEN 411 | Software Re-Engineering                  | 3 | 3 | 0 |
| CSC 113 | SEN 310 | Web Engineering                          | 3 | 2 | 1 |
| CSC 113 | SEN 461 | Secure Programming                       | 3 | 2 | 1 |
| CSC 113 | AIC 301 | Machine Learning                         | 3 | 2 | 1 |
| SEN 120 | SEN 429 | DevOps                                   | 3 | 3 | 0 |
| None    | SEN 448 | Software Applications For Mobile Devices | 3 | 2 | 1 |
| None    | SEN 324 | Software Metrics & Estimation            | 3 | 3 | 0 |
| None    | SEN 450 | Design Pattern                           | 3 | 3 | 0 |
| None    | SEN 452 | Agile Development                        | 3 | 3 | 0 |
| None    | CSC 411 | Artificial Intelligence                  | 3 | 2 | 1 |
| None    | SEN 443 | Introduction to Soft Computing           | 3 | 2 | 1 |
| None    | SEN 331 | Scientific Computing                     | 3 | 3 | 0 |
| None    | SEN 330 | Agent Based Computing                    | 3 | 3 | 0 |
| None    | SEN 459 | Mobile and Pervasive Computing           | 3 | 3 | 0 |
| None    | CEN 451 | Data Encryption & Security               | 3 | 3 | 0 |
| None    | CSC 495 | Introduction to Data Science             | 3 | 2 | 1 |



|      |            |                                       |   |   |   |
|------|------------|---------------------------------------|---|---|---|
| None | SEN<br>332 | Big Data Analytics                    | 3 | 3 | 0 |
| None | SEN<br>455 | Knowledge Based Management<br>Systems | 3 | 3 | 0 |
| None | SEN<br>453 | Information System Audit              | 3 | 3 | 0 |
| None | CSC<br>444 | Computer Graphics                     | 3 | 2 | 1 |
| None | SEN<br>329 | Digital Animation                     | 3 | 3 | 0 |
| None | SEN<br>493 | Multimedia Systems                    | 3 | 3 | 0 |
| None | SEN<br>424 | Semantic Web                          | 3 | 2 | 1 |
| None | SEN<br>456 | Usability Engineering                 | 3 | 3 | 0 |



## MS –EM

**Campuses:** Islamabad

**Regular Program Duration:** 2 Years, 4 Semesters

**Available Specialization:** None

**Program Timing:** Evening

**Entry Requirements:**

1. Bachelor degree or its equivalent in engineering or related scientific field from an accredited institution.
2. Cumulative minimum baccalaureate grade point average of 2.0.
3. Official transcript(s) for all post-secondary coursework.
4. GAT result with at least 50% or more

Additionally, applicants must provide HEC verification of all academic certificates/degrees.

**Program Aims & Objectives:**

Engineering management incorporates the leadership skills and concepts from engineering, business, and governance to develop and manage real solutions to complicated, evolving problems. The individuals that work in this field are systems thinkers who view problems and solutions through a holistic lens, striving to create a systems solution that incorporates evolution and adaptation as a key attribute, rather than struggling simply to interface individually engineered components.

**This program would aim to:**

- Approach each phase of the engineering solution life cycle with the ultimate goal of balancing the risks, needs, and desires of the stakeholders and producing a successful, sustainable system.
- Develop an educational experience that prepares successful leaders for the real world of emerging problems, evolving technologies, and growing complexity in the engineering community.

**The proposed program would bear following objectives:**

- Emphasizing, developing and applying big-picture thinking to manage critical challenges in the respective engineering and technology discipline.
- Extending benefits to students from various engineering backgrounds by sharing case studies from a wide range of engineering disciplines.



|         |         |                                          |   |   |   |
|---------|---------|------------------------------------------|---|---|---|
| SEN 120 | SEN 335 | Object Oriented Software Engineering     | 3 | 2 | 1 |
| SEN 311 | SEN 411 | Software Re-Engineering                  | 3 | 3 | 0 |
| CSC 113 | SEN 310 | Web Engineering                          | 3 | 2 | 1 |
| CSC 113 | SEN 461 | Secure Programming                       | 3 | 2 | 1 |
| None    | SEN 448 | Software Applications For Mobile Devices | 3 | 2 | 1 |
| None    | SEN 324 | Software Metrics & Estimation            | 3 | 3 | 0 |
| None    | SEN 450 | Design Pattern                           | 3 | 3 | 0 |
| None    | SEN 452 | Agile Development                        | 3 | 3 | 0 |
| None    | CSC 411 | Artificial Intelligence                  | 3 | 2 | 1 |
| None    | SEN 443 | Introduction to Soft Computing           | 3 | 2 | 1 |
| None    | SEN 331 | Scientific Computing                     | 3 | 3 | 0 |
| None    | SEN 330 | Agent Based Computing                    | 3 | 3 | 0 |
| None    | SEN 459 | Mobile and Pervasive Computing           | 3 | 3 | 0 |
| None    | CEN 451 | Data Encryption & Security               | 3 | 3 | 0 |
| None    | CSC 495 | Introduction to Data Science             | 3 | 2 | 1 |
| None    | SEN 332 | Big Data Analytics                       | 3 | 3 | 0 |
| None    | SEN 455 | Knowledge Based Management Systems       | 3 | 3 | 0 |
| None    | SEN 453 | Information System Audit                 | 3 | 3 | 0 |
| None    | CSC 444 | Computer Graphics                        | 3 | 2 | 1 |
| None    | SEN 329 | Digital Animation                        | 3 | 3 | 0 |
| None    | SEN 493 | Multimedia Systems                       | 3 | 3 | 0 |
| None    | SEN 424 | Semantic Web                             | 3 | 2 | 1 |
| None    | SEN 456 | Usability Engineering                    | 3 | 3 | 0 |
| SEN 120 | SEN 429 | DevOps                                   | 3 | 3 | 0 |
| CSC 113 | AIC 301 | Machine Learning                         | 3 | 2 | 1 |

## Multi-Disciplinary Engineering Elective (MDEE) Courses

| Pre-Req | Course Code | Course Title Total               | Credit Hours | Theory | Lab |
|---------|-------------|----------------------------------|--------------|--------|-----|
| GSC 110 | GSC 210     | Differential Equations           | 3            | 3      | 0   |
| GSC 110 | GSC 220     | Complex Variables and Transforms | 3            | 3      | 0   |
| GSC 122 | GSC 445     | Operations Research              | 3            | 3      | 0   |
| GSC 122 | CEN 450     | Simulation and Modeling          | 3            | 2      | 1   |
| GSC 114 | GSC 446     | Physics-II (Mechanics)           | 3            | 3      | 0   |
| GSC 122 | GSC 440     | Stochastic Processes             | 3            | 3      | 0   |
| CSC 320 | CEN 449     | System Programming               | 3            | 2      | 1   |
| CSC 320 | CEN 453     | Real Time Systems                | 3            | 3      | 0   |
| CSC 315 | CSC 323     | Compiler Construction            | 3            | 2      | 1   |
| GSC 110 | CSC 453     | Information Theory               | 3            | 3      | 0   |
| CSC 113 | SEN 460     | IoT Application Development      | 3            | 2      | 1   |
| None    | CEN 122     | Digital Design                   | 3            | 2      | 1   |
| None    | CSC 448     | Introduction to Bio-Informatics  | 3            | 3      | 0   |
| None    | CEN 463     | Robotics                         | 3            | 2      | 1   |
| None    | CSC 315     | Theory of Automata               | 3            | 3      | 0   |
| None    | CEN 439     | Embedded System Design           | 3            | 2      | 1   |
| None    | SEN 429     | Fault-Tolerant Systems           | 3            | 3      | 0   |
| None    | SEN 449     | Business Process Automation      | 3            | 3      | 0   |
| None    | HSS 422     | Engineering Ethics               | 3            | 3      | 0   |

## Humanities and Social Sciences Electives

| Pre-Req | Course Code | Course Title Total                      | Credit Hours | Theory | Lab |
|---------|-------------|-----------------------------------------|--------------|--------|-----|
| None    | HSS 217     | Introduction to Sociology               | 2            | 2      | 0   |
| None    | HSS 119     | Introduction to International Relations | 2            | 2      | 0   |
| None    | HSS 121     | Introduction to Media Studies           | 2            | 2      | 0   |
| None    | HSS 218     | Introduction to Anthropology            | 2            | 2      | 0   |
| None    | HSS 457     | Organizational Behavior                 | 2            | 2      | 0   |



|      |         |                                |   |   |   |
|------|---------|--------------------------------|---|---|---|
| None | PSY 102 | Introduction to Psychology     | 2 | 2 | 0 |
| None | HSS 413 | Sociology for Engineers        | 2 | 2 | 0 |
| None | SEN 442 | Software Engineering Economics | 2 | 2 | 0 |
| None | ENG 121 | English Literature             | 2 | 2 | 0 |
| None | HSS 462 | Foreign Language               | 2 | 2 | 0 |
| None | HSS 463 | Accounting & Finance           | 2 | 2 | 0 |

### Management Science Electives

| Pre-Req | Course Code | Course Title Total                | Credit Hours | Theory | Lab |
|---------|-------------|-----------------------------------|--------------|--------|-----|
| None    | HSS 423     | Entrepreneurship                  | 2            | 2      | 0   |
| None    | MGT 111     | Principles of Management          | 3            | 3      | 0   |
| None    | HSS 453     | Human Resource Management         | 3            | 3      | 0   |
| None    | MGT 423     | Engineering Management            | 3            | 3      | 0   |
| None    | MTM 101     | Introduction to Maritime Industry | 3            | 3      | 0   |

## Program Learning Outcomes

The Engineering Management program prepares students to attain the educational objectives by ensuring that students demonstrate achievement of the following student outcomes.

**PLO 1:** An ability to identify, formulate, analyze, and solve engineering management problems.

**PLO 2:** An ability to design, implement, and provide management solutions to complex industrial and entrepreneurial concerns.

**PLO 3:** An ability to use current techniques, technologies, and tools necessary for professional practice.

**PLO 4:** An ability to design and conduct studies and research appropriate to the discipline, as well as to analyze and interpret data.

**PLO 5:** An ability to communicate with a range of audiences and function on multidisciplinary teams to accomplish common goals.

**PLO 6:** An understanding of professional, ethical, legal, security, and societal issues and responsibilities appropriate to the discipline.

## Roadmap for MS-EM

The MS-EM program is divided into four semesters. The first semester mainly comprises of core courses, in addition to a university requirement course for the program. In semester two and three, a student is supposed to acquire competency by choosing appropriate elective courses in the area of interest. In the final semester, a student may opt to undertake research work (i.e. thesis) or study elective appropriate courses for his/her area of specialization.

### Semester 1

| Course code | 1 Course Title                       | Credits |
|-------------|--------------------------------------|---------|
| EMG 500     | Principles of Engineering Management | 3       |
| EMG 501     | Finance for Engineers                | 3       |
| ESC 701     | Research Methodology                 | 3       |
| Total       |                                      | 9       |

## Semester 2

| Course code | 1 Course Title                 | Credits |
|-------------|--------------------------------|---------|
| EMG 601     | Engineering Project Management | 3       |
| EMG 604     | Quality Engineering            | 3       |
|             | Elective - 1                   | 3       |
| Total       |                                | 9       |

## Semester 3

| Course code | 1 Course Title                         | Credits |
|-------------|----------------------------------------|---------|
|             | Elective - II                          | 3       |
|             | Elective - III                         | 3       |
| ESC-600     | Thesis 1/ Course Work (Elective - III) | 3       |
| Total       |                                        | 9       |

## Semester 4

| Course code | Course Title                            | Credits |
|-------------|-----------------------------------------|---------|
|             | Elective - IV                           | 3       |
| ESC-600     | Thesis 2/ Course Work (Elective Course) | 3       |
| Total       |                                         | 6       |

## Core Courses for MS-EM:

The following are the core courses for MS-EM program:

| Code    | Course Title                         | Credit Hours |
|---------|--------------------------------------|--------------|
| EMG 500 | Principles of Engineering Management | 03           |
| EMG 501 | Finance for Engineers                | 03           |
| EMG 601 | Engineering Project Management       | 03           |
| EMG 604 | Quality Engineering                  | 03           |

Following is the university core:

| Code    | Course Title         | Credit Hours |
|---------|----------------------|--------------|
| ESC 701 | Research Methodology | 03           |

Following is the university core:

| Course Code                                    | Course Title                                              | Credit Hours |
|------------------------------------------------|-----------------------------------------------------------|--------------|
| <b>1. Operations Management</b>                |                                                           |              |
| EMG 602                                        | Business Process Analysis and Development                 | 03           |
| OPM 611                                        | Operations and Production Management                      | 03           |
| SCM 510                                        | Supply Chain Management                                   | 03           |
| EMG 605                                        | Forecasting and Decision Making                           | 03           |
| EMG 629                                        | Advanced Operations Research                              | 03           |
| EMG 635                                        | Industrial Psychology                                     | 03           |
| <b>2. Energy Management and Urban Planning</b> |                                                           |              |
| EMG 622                                        | Management in Global Energy Industry                      | 03           |
| EMG 623                                        | Business Policy and Regulations in Global Energy Industry | 03           |
| EMG 624                                        | Traffic Engineering                                       | 03           |
| EMG 625                                        | Urban and Regional Planning                               | 03           |
| EMG 632                                        | Energy Economics                                          | 03           |
| EEP 514                                        | Renewable Energy                                          | 03           |
| <b>3. Organizational Management</b>            |                                                           |              |
| HRM 648                                        | Organizational Development                                | 03           |
| EMG 612                                        | Marketing Management for Engineering Concerns             | 03           |



|                                                          |                                                               |    |
|----------------------------------------------------------|---------------------------------------------------------------|----|
| EMG 613                                                  | Advanced Statistical Methods for Engineering Research         | 03 |
| EMG 615                                                  | Human Resource Management and Corporate Social Responsibility | 03 |
| EMG 616                                                  | Systems Thinking                                              | 03 |
| EMG 627                                                  | Entrepreneurship for Engineers                                | 03 |
| SCM 513                                                  | Engineering Laws and Contract Management                      | 03 |
| MGT 662                                                  | Strategic Management                                          | 03 |
| FIN 681                                                  | Financial Risk Management                                     | 03 |
| <b>4. Information, Knowledge and Software Management</b> |                                                               |    |
| SEN 762                                                  | Advanced Big Data Analytics                                   | 03 |
| EMG 617                                                  | Information Systems Management                                | 03 |
| EMG 618                                                  | Enterprise Systems and Audit                                  | 03 |
| EMG 619                                                  | Information Systems Strategy and Innovation                   | 03 |
| EMG 630                                                  | Information Systems Security and Ethics                       | 03 |
| SEN 756                                                  | Advanced Usability Engineering                                | 03 |
| EMG 621                                                  | Socio-Technical Systems                                       | 03 |
| CSC 518                                                  | Decision Support Systems                                      | 03 |
| SEN 658                                                  | Systems Requirement Engineering                               | 03 |
| SEN 621                                                  | Advanced Software and System Architecture                     | 03 |

|                                 |                                                 |    |
|---------------------------------|-------------------------------------------------|----|
| SEN 523                         | Automated Software Engineering                  | 03 |
| CSC 746                         | Advanced Data Mining and Warehousing            | 03 |
| SEN 647                         | Advanced Software Project Management            | 03 |
| <b>5. Technology Management</b> |                                                 |    |
| EMG 631                         | Innovation and Technology Management            | 03 |
| EMG 630                         | Technology and Entrepreneurship                 | 03 |
| EMG 701                         | Competitive Strategies in Technology Management | 03 |
| EMG 702                         | Transfer of Technology                          | 03 |

### MS – SE

**Campuses:** Islamabad, Karachi

**Regular Program Duration:** 2 Years, 4 Semesters

**Available Specialization:**

Software Engineering

**Program Timing:** Evening

**Entry requirements:**

“HEC recognized 4 years Bachelor’s Degree or equivalent in a relevant computing discipline (Software Engineering, Computer Science, IT, Computer Engineering, Information Systems & Informatics or equivalent) with a minimum CGPA of 2.0/4.0 or 50% marks where CGPA is not given.

Prospective applicants must have taken the following courses in the graduated degree program:

1. Introduction to Software Engineering
2. Object Oriented Programming
3. Data Structure & Algorithms

Students will be required to complete the deficiency courses (as mentioned above) if required. Additionally, applicants must provide HEC verification of all academic



degrees and transcripts.”

### **Program Educational Objectives:**

1. Prepare graduates who can critically apply concepts, theories and practices to provide creative solutions of complex computing problems.
2. Prepare graduates with a theoretical software engineering background and applied research needed to enter a doctorate program in relevant domains of computing or pursue a research career in Industry.
3. Prepare graduates who are able to join an appropriate and respectable level position in a computing related field and to maintain their professional skills in rapidly evolving field.

### **Learning Outcomes of the Degree Program:**

The MS SE program offers the following learning outcomes by which students are:

1. Able to demonstrate an understanding of advanced knowledge of the practice of software, from vision to analysis, design, validation and deployment
2. Able to tackle complex engineering problems and tasks, using contemporary engineering principles, methodologies, and tools
3. Able to understand research aspects of software engineering and its relevant domain
4. Able to communicate effectively, in both oral and written forms

### **Road Map**

#### **Semester 1**

| Course code                                | Subject                               | Credits |
|--------------------------------------------|---------------------------------------|---------|
| SEN 558                                    | Advanced Requirement Engineering      | 3       |
| SEN 522                                    | Advanced Software System Architecture | 3       |
| ESC 701                                    | Research Methodology                  | 3       |
| Total credits for 1 <sup>st</sup> semester |                                       | 9       |

## Semester 2

| Course code | Subject                                    | Credits |
|-------------|--------------------------------------------|---------|
| SEN 547     | Software Testing and Quality Assurance     | 3       |
|             | Elective I                                 | 3       |
|             | Elective II                                | 3       |
|             | Total credits for 2 <sup>nd</sup> Semester | 9       |

## Semester 3

| Course code | Subject                                    | Credits |
|-------------|--------------------------------------------|---------|
|             | Elective III                               | 3       |
|             | Elective IV                                | 3       |
| ESC-600     | Thesis 1/ Course Work ( Elective v)        | 3       |
|             | Total credits for 3 <sup>rd</sup> Semester | 9       |

## Semester 4

| Course code | Subject                                    | Credits |
|-------------|--------------------------------------------|---------|
| ESC-600     | Thesis 11/ Course Work (Elective VI)       | 3       |
|             | Total credits for 4 <sup>th</sup> Semester | 3       |

**Total Program Credit Hours: 30**

## CORE COURSES

| S.No | New Course Code | Course Title                           | Credits |
|------|-----------------|----------------------------------------|---------|
| 1    | SEN 558         | Advanced Requirement Engineering       | 3       |
| 2    | SEN 522         | Advanced Software System Architecture  | 3       |
| 3    | SEN 547         | Software Testing and Quality Assurance | 3       |
| 4    | ESC 701         | Research Methodology                   | 3       |

## General Electives Courses

| S.No | New Course Code | Course Title                         | Credits |
|------|-----------------|--------------------------------------|---------|
| 1    | CSC 720         | Advanced Operating Systems           | 3       |
| 2    | CSC 753         | Distributed Databases                | 3       |
| 3    | CSC 764         | Computer Vision                      | 3       |
| 4    | CEN 745         | Advanced Digital Image Processing    | 3       |
| 5    | CSC 751         | Pattern Recognition                  | 3       |
| 6    | CSC 744         | Advanced Computer Graphics           | 3       |
| 7    | CEN 707         | Advanced Distributed Systems         | 3       |
| 8    | CSC 704         | Advanced Cryptography                | 3       |
| 9    | CSC 711         | Advanced Artificial Intelligence     | 3       |
| 10   | CSC 741         | Advanced Natural Processing          | 3       |
| 11   | CSC 750         | Advanced Neural Networks             | 3       |
| 12   | CSC 765         | Bio Medical Image Analysis           | 3       |
| 13   | CSC 781         | Cloud Computing                      | 3       |
| 14   | SEN 604         | Block chain Technologies             | 3       |
| 15   | DSC 707         | Deep Learning                        | 3       |
| 16   | CSC 759         | Agent-based Modeling                 | 3       |
| 17   | CSC-708         | Advanced Simulation and Modeling     | 3       |
| 18   | CSC-504         | Ubiquitous Computing                 | 3       |
| 19   | CSC-746         | Advanced Data Mining                 | 3       |
| 20   | CSC 760         | Advanced Data Warehousing            | 3       |
| 21   | CEN 720         | Advanced Computer Architecture       | 3       |
| 22   | CSC 719         | Machine Learning                     | 3       |
| 23   | CSC 521         | Advanced Design & Analysis Algorithm | 3       |
| 24   | GSC 700         | Advanced Engineering Mathematics     | 3       |
| 25   | EET 702         | Advanced Network Security            | 3       |

## ELECTIVES

| S.No | New Course Code | Course Title                                  | Credits |
|------|-----------------|-----------------------------------------------|---------|
| 5    | SEN 523         | Automated Software Engineering                | 3       |
| 6    | SEN 546         | Software Metrics                              | 3       |
| 7    | SEN 601         | Advanced Software Project Management          | 3       |
| 8    | SEN 602         | Agile Software Development Methods            | 3       |
| 9    | SEN 720         | Advanced Human Computer Interaction           | 3       |
| 10   | SEN 723         | Formal Methods and Specifications             | 3       |
| 11   | SEN 754         | Advanced Web Computing System and Application | 3       |
| 12   | SEN 755         | Service -Oriented Computing                   | 3       |
| 13   | SEN 756         | Advanced usability Engineering                | 3       |
| 14   | SEN 758         | Component-based Software Engineering          | 3       |
| 15   | SEN 759         | Software Re-Engineering                       | 3       |
| 16   | SEN 760         | Complex Adaptive Systems                      | 3       |
| 17   | SEN 762         | Advanced Big Data Analytics                   | 3       |
| 18   | SEN 763         | Advanced Software Engineering                 | 3       |
| 19   | SEN 764         | Ontology Engineering                          | 3       |
| 20   | SEN 774         | IoTs Architecture, protocol & applications    | 3       |
| 21   | SEN 603         | Complex Networks                              | 3       |

## PhD (SE)

**Campus:** Islamabad, Karachi

**Regular Program Duration:** 3 Years

**Available Specialization:** None

**Program Timing:** Evening

### Entry Requirements

- 18 Years of education (MS/MPhil/equivalent) in the relevant discipline from an HEC recognized university with a minimum CGPA of 3.00/4.00 (Semester System) or 60% marks (Annual System).
- NTS-GAT(Subject) or GRE (Subject) Test passed with minimum 60% score in the relevant computing domain (Computer Science/Software Engineering/IT) or BU Admission Test (70% passing marks).
- Initial Research Proposal / Statement of Purpose is required at the time of PhD admission.

## Road Map

### Semester 1

| Sr. No. | Course Code | Course Title                    | Credit Hours |
|---------|-------------|---------------------------------|--------------|
| 1       | ESC 801     | Research Methods in PhD Studies | 3            |
| 2       |             | Elective I                      | 3            |
| 3       |             | Elective II                     | 3            |

### Semester 2

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       |             | Elective III | 3            |
| 2       |             | Elective IV  | 3            |
| 3       |             | Elective V   | 3            |

### Semester 3

| Sr. No. | Course Code | Course Title       | Credit Hours |
|---------|-------------|--------------------|--------------|
| 1       |             | Comprehensive exam | 0            |
| 2       | THS 900     | PhD Thesis         | 9            |

### Semester 4

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 9            |

### Semester 5

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 9            |

### Semester 6

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 9            |

### List of Electives Courses

| Sr. No. | Course Code | Course Title                                      | Credit Hours |
|---------|-------------|---------------------------------------------------|--------------|
| 1       | SEN 820     | Emerging Trends in Human Computer Interaction     | 3            |
| 2       | SEN 856     | Advance Topics in Usability Engineering           | 3            |
| 3       | SEN 823     | Formal Models & Methods in Software Engineering   | 3            |
| 4       | SEN 863     | Advanced Software Engineering Methods & Practices | 3            |



|           |         |                                                          |   |
|-----------|---------|----------------------------------------------------------|---|
| <b>5</b>  | SEN 859 | Advanced Software Re-Engineering                         | 3 |
| <b>6</b>  | SEN 858 | Emerging Trends in Component -Based Software Engineering | 3 |
| <b>7</b>  | SEN 812 | Agile Methods                                            | 3 |
| <b>8</b>  | SEN 815 | Verification & Validation                                | 3 |
| <b>9</b>  | SEN 813 | Advanced Software Requirement Engineering                | 3 |
| <b>10</b> | SEN 857 | Advanced Empirical Software Engineering                  | 3 |
| <b>11</b> | SEN 801 | Model Driven Software Engineering                        | 3 |
| <b>12</b> | SEN 802 | Special Topics in Software Engineering                   | 3 |
| <b>13</b> | SEN 854 | Web Computing Research Strategies                        | 3 |
| <b>14</b> | SEN 855 | Advanced topics in Service-Oriented Computing            | 3 |
| <b>15</b> | SEN 816 | Middleware For Networked and Distributed Systems         | 3 |
| <b>16</b> | CSC 881 | Advanced Cloud Computing                                 | 3 |
| <b>17</b> | CEN 807 | Distributed Systems Architecture and Design              | 3 |
| <b>18</b> | SEN 803 | Advanced e-Learning Systems                              | 3 |
| <b>19</b> | SEN 861 | Semantic Web Modeling and Applications                   | 3 |
| <b>20</b> | SEN 864 | Knowledge Representation and Reasoning                   | 3 |
| <b>21</b> | SEN 860 | Emerging Trends in Complex Adaptive System               | 3 |
| <b>22</b> | CEN 808 | Advanced Techniques in System Modeling and Simulation    | 3 |
| <b>23</b> | DSC 802 | Advanced Data Visualization                              | 3 |
| <b>24</b> | SEN 862 | Emerging Trends in Big Data Analytics                    | 3 |
| <b>25</b> | DSC 807 | Advanced Deep Learning                                   | 3 |
| <b>26</b> | CSC 841 | Advanced Computational Linguistics                       | 3 |



|           |         |                                             |   |
|-----------|---------|---------------------------------------------|---|
| <b>27</b> | CSC 851 | Advanced Pattern Recognition                | 3 |
| <b>28</b> | CSC 819 | Research Trends in Machine Learning         | 3 |
| <b>29</b> | DSC 802 | Advanced Data Visualization                 | 3 |
| <b>30</b> | DSC 800 | Advanced Data Analytics                     | 3 |
| <b>31</b> | CEN 845 | Image Analysis and Pattern Recognition      | 3 |
| <b>32</b> | SEN 853 | Advanced Power-Aware Computing              | 3 |
| <b>33</b> | SEN 814 | Ubiquitous Computing and Interaction        | 3 |
| <b>34</b> | ISC 821 | Advance Topics in Cryptography              | 3 |
| <b>35</b> | CSC 820 | Advanced Topics in Operating Systems        | 3 |
| <b>36</b> | CEN 820 | High Performance Computer Architecture      | 3 |
| <b>37</b> | EET 837 | Advanced Data Communication Systems         | 3 |
| <b>38</b> | EET 832 | Advance topics in Network Security          | 3 |
| <b>39</b> | CEN 842 | Digital Systems Integration and Design      | 3 |
| <b>40</b> | EEN 831 | Statistical Signal Processing               | 3 |
| <b>41</b> | SEN 810 | Secure Software Systems                     | 3 |
| <b>42</b> | SEN 808 | Computer and Cybersecurity                  | 3 |
| <b>43</b> | SEN 809 | Internet of Things: Design and Applications | 3 |

### List of Deficiency Courses

Deficiency courses can be selected from 700-level courses of MS SE Roadmap, as recommended by the Admission Committee.



## DEPARTMENT OF ELECTRICAL ENGINEERING

### Programs offered:

- Bachelor of Electrical Engineering (BEE)
- MS (Electrical Engineering)
- PhD (Electrical Engineering)

Electrical engineering is one of the oldest disciplines of engineering. Initially it was confined to few areas such as power generation, transmission and distribution, radio communication and wireless telephony. However, in the last half of the century it has seen tremendous growth and expansion. The diversification and expansion in some areas of Electrical Engineering has been of such a large magnitude that they seem to be independent disciplines in their own. However, in a large part of the world electrical engineering is still considered to be the parent discipline. This curriculum has been developed on this rationale. It facilitates the teaching of common core courses and selection of courses of a particular area depending upon the need and availability of the resources.

### Bachelor of Electrical Engineering

#### Eligibility Criteria:

Passed intermediate examination or it's equivalent with a minimum of 60% marks in Pre-Engineering.

#### Objectives of the Degree Program

**PEO 1:** To provide viable solutions to complex engineering problems based on systematic theoretical and technical approaches in the field of electrical engineering.

**PEO 2:** To manage and develop sustainable electrical systems to meet desired objectives and explore new entrepreneurial possibilities in a multidisciplinary environment.

**PEO 3:** To pursue academic and professional growth by taking up higher studies, discovering new technologies and developing proficiency in the usage of latest tools.

**PEO 4:** To work in a multicultural environment and be responsive to ethical, moral, and societal issues showing leadership in their domain.



## Learning outcome of the Degree Program

**Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data and synthesis of information to derive valid conclusions.

**Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

**The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.

**Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of, and need for, sustainable development.

**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

**Individual and Team Work:** An ability to work effectively, as an individual or in a



team, on multifaceted and /or multidisciplinary settings.

**Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

**Lifelong Learning:** An ability to recognize the need for, and have the preparation and ability to engage in, independent and life-long learning in the broadest context of technological change.

### **Bachelor of Electrical Engineering Scheme of Studies**

|                                     |                                         |
|-------------------------------------|-----------------------------------------|
| Campus                              | Islamabad/Karachi                       |
| Department                          | Department of Electrical Engineering    |
| Program title                       | BEE                                     |
| Program level                       | Bachelors                               |
| Total duration of program           | 4 years                                 |
| Total number of semesters           | 8 Semesters                             |
| Total number of credit hours        | 136                                     |
| Number of credit hours per semester | 16-18                                   |
| Engineering courses                 | 28 Courses, 95 Cr hrs., 69.9 % of total |
| Non-Engineering courses             | 15 Courses, 41 Cr hrs., 30.1 % of total |

## Courses of Non-Engineering Domain

| Knowledge Area                        | Sub Area        | Name of Course                             | Lec. Cr. Hrs | Lab Cr. Hrs | Total Cr. Hrs. | Total Courses | Total Credits | % Area | % Overall |
|---------------------------------------|-----------------|--------------------------------------------|--------------|-------------|----------------|---------------|---------------|--------|-----------|
| <b>Humanities and Social Sciences</b> | English         | Functional English                         | 2            | 0           | 2              | 3             | 7             | 17     | 5.1       |
|                                       |                 | Comm. Skills                               | 2            | 0           | 2              |               |               |        |           |
|                                       |                 | Technical Report Writing & Present. Skills | 3            | 0           | 3              |               |               |        |           |
|                                       | Culture         | Islamic Studies/ Ethics                    | 2            | 0           | 2              | 2             | 4             | 9.7    | 2.9       |
|                                       |                 | Pakistan Studies                           | 2            | 0           | 2              |               |               |        |           |
|                                       | Social Sciences | Social Sciences Elective 1                 | 3            | 0           | 3              | 2             | 6             | 14.6   | 4.4       |
|                                       |                 | Social Sciences Elective 2                 | 3            | 0           | 3              |               |               |        |           |
| <b>Management Sciences</b>            |                 | Management Sciences Elective 1             | 2            | 0           | 2              | 2             | 5             | 12.2   | 3.7       |
|                                       |                 | Management Sciences Elective 2             | 3            | 0           | 3              |               |               |        |           |
| <b>Natural Sciences</b>               | Math            | Calculus and Analytical Geometry           | 3            | 0           | 3              | 4             | 12            | 29.2   | 8.8       |
|                                       |                 | Linear Algebra                             | 3            | 0           | 3              |               |               |        |           |
|                                       |                 | Differential Equations                     | 3            | 0           | 3              |               |               |        |           |
|                                       |                 | Complex Variable and Transform             | 3            | 0           | 3              |               |               |        |           |
|                                       | Physics         | Applied Physics                            | 3            | 1           | 4              | 1             | 4             | 9.8    | 2.9       |

|              |           |             |    |   |    |    |    |      |       |
|--------------|-----------|-------------|----|---|----|----|----|------|-------|
|              | Electives | Elective 1* | 3  | 0 | 3  | 1  | 3  | 7.3  | 2.2   |
| <b>Total</b> |           |             | 40 | 1 | 41 | 15 | 41 | 100% | 30.1% |

### Courses of Engineering Domain

| Knowledge Area                               | Name of Course                     | Lec. Cr. Hrs. | Lab Cr. Hrs. | Total Cr. Hrs. | Total Courses | Total Cr. Hrs. | % Area | % Overall |
|----------------------------------------------|------------------------------------|---------------|--------------|----------------|---------------|----------------|--------|-----------|
| <b>Computing</b>                             | Introduction to Computing          | 1             | 1            | 2              | 3             | 9              | 9.5    | 6.6       |
|                                              | Programming Fundamentals           | 2             | 1            | 3              |               |                |        |           |
|                                              | Computing Elective                 | 3             | 1            | 4              |               |                |        |           |
| <b>Electrical Engineering Foundation</b>     | Linear Circuit Analysis            | 3             | 1            | 4              | 9             | 28             | 29.5   | 20.6      |
|                                              | Electrical Network Analysis        | 3             | 1            | 4              |               |                |        |           |
|                                              | Workshop Practice                  | 0             | 1            | 1              |               |                |        |           |
|                                              | Signals and Systems                | 3             | 1            | 4              |               |                |        |           |
|                                              | Electronic Devices & Circuits      | 3             | 1            | 4              |               |                |        |           |
|                                              | Digital Logic Design               | 3             | 1            | 4              |               |                |        |           |
|                                              | Electromagnetic field theory       | 3             | 0            | 3              |               |                |        |           |
|                                              | Probability Methods in Engineering | 3             | 0            | 3              |               |                |        |           |
|                                              | Engineering Drawing                | 0             | 1            | 1              |               |                |        |           |
| <b>Electrical Engineering Core (Breadth)</b> | Communication Systems              | 3             | 1            | 4              | 7             | 28             | 29.5   | 20.6      |
|                                              | Embedded system design             | 3             | 1            | 4              |               |                |        |           |
|                                              | Electrical Machines                | 3             | 1            | 4              |               |                |        |           |
|                                              | Linear Control Systems             | 3             | 1            | 4              |               |                |        |           |
|                                              | Electronic Circuit Design          | 3             | 1            | 4              |               |                |        |           |
|                                              | Breadth Core 1                     | 3             | 1            | 4              |               |                |        |           |
|                                              | Breadth Core 2                     | 3             | 1            | 4              |               |                |        |           |
| <b>Electrical Engineering Core (Depth)</b>   | Depth Elective 1                   | 3             | 1            | 4              | 5             | 19             | 20     | 13.9      |
|                                              | Depth Elective 2                   | 3             | 1            | 4              |               |                |        |           |
|                                              | Depth Elective 3                   | 3             | 1            | 4              |               |                |        |           |
|                                              | Depth Elective 4                   | 3             | 1            | 4              |               |                |        |           |
|                                              | Depth Elective 5                   | 3             | 0            | 3              |               |                |        |           |
| <b>IDEE</b>                                  | IDEE-1                             | 2             | 0            | 2              | 2             | 5              | 5.2    | 3.8       |
|                                              | IDEE-2                             | 3             | 0            | 3              |               |                |        |           |
| <b>Senior Design Project</b>                 | Senior Design Project 1            | 0             | 3            | 3              | 2             | 6              | 6.3    | 4.4       |
|                                              | Senior Design Project 2            | 0             | 3            | 3              |               |                |        |           |
| <b>Internship (Summer)</b>                   |                                    | 0             | 0            | 0              | 0             | 0              | 0      | 0         |
| <b>Total</b>                                 |                                    |               |              |                | 28            | 95             | 100    | 69.9%     |

## Semester-1

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title                             | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|------------------------------------------|--------------|--------|-----------|
| 1                                       | None                      | GSC 110     | Applied Calculus and Analytical Geometry | 3+0          | 3      | 0         |
| 2                                       | None                      | CSC 111     | Introduction to Computing                | 1+1          | 1      | 1         |
| 3                                       | None                      | ENG 104     | Functional English                       | 2+0          | 2      | 0         |
| 4                                       | None                      | ISL 101     | Islamic Studies/ Ethics                  | 2+0          | 2      | 0         |
| 5                                       | None                      | XXXX        | IDEED-1                                  | 2+0          | 2      | 0         |
| 6                                       | None                      | GSC 113     | Applied Physics                          | 3+1          | 3      | 1         |
| 7                                       | None                      | EEL 112     | Workshop Practice                        | 0+1          | 0      | 1         |
| <b>Total Credit Hours in Semester-1</b> |                           |             |                                          | 16           | 13     | 3         |

## Semester-2

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title              | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|---------------------------|--------------|--------|-----------|
| 1                                       | None                      | EEL 121     | Engineering Drawing & CAD | 0+1          | 0      | 1         |
| 2                                       | GSC 110                   | GSC 210     | Differential Equations    | 3+0          | 3      | 0         |
| 3                                       | CSC 111                   | CSC 112     | Programming Fundamentals  | 2+1          | 2      | 1         |
| 4                                       | None                      | EEN 110     | Linear Circuit Analysis   | 3+1          | 3      | 1         |
| 5                                       | None                      | CEN 120     | Digital Logic Design      | 3+1          | 3      | 1         |
| 6                                       | None                      | PAK 101     | Pakistan Studies          | 2+0          | 2      | 0         |
| <b>Total Credit Hours in Semester-2</b> |                           |             |                           | 17           | 13     | 4         |

### Semester-3

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title                     | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|----------------------------------|--------------|--------|-----------|
| 1                                       | None                      | HSS 118     | Communication Skills             | 2+0          | 2      | 0         |
| 2                                       | EEN 110                   | EEN 224     | Electronic Devices and Circuits  | 3+1          | 3      | 1         |
| 3                                       | EEN 110                   | EEN 211     | Electrical Network Analysis      | 3+1          | 3      | 1         |
| 4                                       | CSC 112                   | CSC XXX     | Computing Elective               | 3+1          | 3      | 1         |
| 5                                       | GSC 110                   | GSC 220     | Complex Variables and Transforms | 3+0          | 3      | 0         |
| <b>Total Credit Hours in Semester-3</b> |                           |             |                                  | 17           | 14     | 3         |

### Semester-4

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title                             | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|------------------------------------------|--------------|--------|-----------|
| 1                                       | None                      | GSC 121     | Linear algebra                           | 3+0          | 3      | 0         |
| 2                                       | None                      | HSS XXX     | Humanities & Social Sciences Elective -1 | 3+0          | 3      | 0         |
| 3                                       | None                      | EEN 313     | Signals and Systems                      | 3+1          | 3      | 1         |
| 4                                       | EEN 224                   | EEN 225     | Electronic Circuit Design                | 3+1          | 3      | 1         |
| 5                                       | GSC 110                   | EEN 226     | Probability Methods in Engineering       | 3+0          | 3      | 0         |
| <b>Total Credit Hours in Semester-4</b> |                           |             |                                          | 17           | 15     | 2         |

## Semester-5

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title                 | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|------------------------------|--------------|--------|-----------|
| 1                                       | GSC 110                   | EEN 311     | Electromagnetic Field Theory | 3+0          | 3      | 0         |
| 2                                       | CEN 120                   | CEN 440     | Embedded systems Design      | 3+1          | 3      | 1         |
| 3                                       | XXXX                      | XXXX        | Natural Science Elective     | 3+0/2+1      | 3/2    | 0/1       |
| 4                                       | EEN 313                   | EET 321     | Communication Systems        | 3+1          | 3      | 1         |
| 5                                       | EEN 211                   | EEN 312     | Electrical Machines          | 3+1          | 3      | 1         |
| <b>Total Credit Hours in Semester-5</b> |                           |             |                              | 18           | 15/14  | 3/4       |

## Semester-6

| Sr. No.                                 | Pre-requisite course code | Course Code        | Course Title                  | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|--------------------|-------------------------------|--------------|--------|-----------|
| 1                                       | XXXX                      | EEXXX              | Breadth Core- 1               | 3+1          | 3      | 1         |
| 2                                       | EEN 313                   | EEN 412            | Linear Control Systems        | 3+1          | 3      | 1         |
| 3                                       | None                      | MGTXXX/<br>HSS XXX | Management Science Elective 1 | 2+0          | 2      | 0         |
| 4                                       | XXXX                      | EEXXXX             | Depth Elective 1              | 3+1          | 3      | 1         |
| 5                                       | XXXX                      | EEXXXX             | Breadth Core-2                | 3+1          | 3      | 1         |
| <b>Total Credit Hours in Semester-6</b> |                           |                    |                               | 18           | 14     | 4         |

## Semester-7

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title                        | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|-------------------------------------|--------------|--------|-----------|
| 1                                       | None                      | ESC 498     | Project – 1                         | 0+3          | 0      | 3         |
| 2                                       | None                      | HSS 320     | Tech. Writing & Presentation Skills | 3+0          | 3      | 0         |
| 3                                       | XXXX                      | EEXXX       | Depth Elective 2                    | 3+1          | 3      | 1         |
| 4                                       | XXXX                      | EEXXX       | Depth Elective 3                    | 3+1          | 3      | 1         |
| 5                                       | XXXX                      | XXXX        | IDEE-2                              | 3+0          | 3      | 0         |
| <b>Total Credit Hours in Semester-7</b> |                           |             |                                     | 17           | 12     | 5         |

## Semester-8

| Sr. No.                                 | Pre-requisite course code | Course Code | Course Title                     | Credit Hours | Theory | Practical |
|-----------------------------------------|---------------------------|-------------|----------------------------------|--------------|--------|-----------|
| 1                                       | XXXX                      | ESC 499     | Project-2                        | 0+3          | 0      | 3         |
| 2                                       | None                      | HSSXXX      | Humanities & SS Elective-2       | 3+0          | 3      | 0         |
| 3                                       | None                      | HSSXXX      | Management sciences Elective - 2 | 3+0          | 3      | 0         |
| 4                                       | XXXX                      | EEXXXX      | Depth Elective 4                 | 3+1          | 3      | 1         |
| 5                                       | XXXX                      | EEXXXX      | Depth Elective 5                 | 3+0          | 3      | 0         |
| <b>Total Credit Hours in Semester-8</b> |                           |             |                                  | 16           | 12     | 4         |

## List of Elective Courses Non-Engineering Domain Electives

### A. Humanities and Social Sciences Electives

| Sr. No. | Pre-requisite course code | Course Code | Course Title                            | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|-----------------------------------------|--------------|--------|-----------|
| 1       | None                      | HSS 422     | Engineering Ethics                      | 3+0          | 3      | 0         |
| 2       | None                      | HSS 202     | Introduction to Sociology               | 3+0          | 3      | 0         |
| 3       | None                      | BES 103     | Critical Thinking                       | 3+0          | 3      | 0         |
| 4       | None                      | HSS 456     | Organizational Behavior                 | 3+0          | 3      | 0         |
| 5       | None                      | PSY 401     | Professional Psychology                 | 3+0          | 3      | 0         |
| 6       | None                      | HSS 111     | Introduction to International Relations | 3+0          | 3      | 0         |

### B. Management Science Electives

| Sr. No. | Pre-requisite course code | Course Code | Course Title                      | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|-----------------------------------|--------------|--------|-----------|
| 1       | None                      | HSS 423     | Entrepreneurship                  | 2+0          | 2      | 0         |
| 2       | None                      | MGT 421     | Leadership                        | 2+0          | 2      | 0         |
| 3       | None                      | MGT 422     | Personal Grooming                 | 2+0          | 2      | 0         |
| 4       | None                      | MGT 111     | Principles of Management          | 3+0          | 3      | 0         |
| 5       | None                      | MGT 423     | Engineering Management            | 3+0          | 3      | 0         |
| 6       | None                      | MGT 424     | Engineering Economics             | 3+0          | 3      | 0         |
| 7       | None                      | MGT 425     | Project Management in Engineering | 3+0          | 3      | 0         |

## C. Natural Sciences Electives

| Sr. No. | Pre-requisite course code | Course Code | Course Title           | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|------------------------|--------------|--------|-----------|
| 1       | GSC 110                   | GSC 211     | Multivariable Calculus | 3+0          | 3      | 0         |
| 2       | GSC 210                   | GSC 320     | Numerical Analysis     | 3+0          | 3      | 0         |
| 3       | None                      | GSC 221     | Discrete Mathematics   | 3+0          | 3      | 0         |
| 4       | None                      | GSC 340     | Chemistry              | 2+1          | 2      | 1         |

## Engineering Domain Electives

### A. Computing Electives

| Sr. No. | Pre-requisite course code | Course Code | Course Title                 | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|------------------------------|--------------|--------|-----------|
| 1       | CSC 112                   | CSC 210     | Object Oriented Programming  | 3+1          | 3      | 1         |
| 2       | CSC 112                   | CSC 221     | Data structure and Algorithm | 3+1          | 3      | 1         |

### B. Breadth Core Electives

#### 1. Power Engineering

| Sr. No. | Pre-requisite course code | Course Code | Course Title                                         | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|------------------------------------------------------|--------------|--------|-----------|
| 1       | EEN 211                   | EEP 331     | Power System Analysis<br>Breadth Core 1              | 3+1          | 3      | 1         |
| 2       | EEN 219                   | EEN 433     | Power Distribution and<br>Utilization Breadth Core 2 | 3+1          | 3      | 1         |

#### 2. Electronics Engineering

| Sr. No. | Pre-requisite course code | Course Code | Course Title                        | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|-------------------------------------|--------------|--------|-----------|
| 1       | EEN 224                   | EEP 468     | Power Electronics<br>Breadth Core 1 | 3+1          | 3      | 1         |

|   |         |         |                                             |     |   |   |
|---|---------|---------|---------------------------------------------|-----|---|---|
| 2 | EEN 313 | EEN 325 | Digital Signal Processing<br>Breadth Core 2 | 3+1 | 3 | 1 |
|---|---------|---------|---------------------------------------------|-----|---|---|

### 3. Telecommunication Engineering

| Sr. No. | Pre-requisite course code | Course Code | Course Title                                     | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|--------------------------------------------------|--------------|--------|-----------|
| 1       | None                      | CEN 223     | Computer Communication & Networks Breadth Core 1 | 3+1          | 3      | 1         |
| 2       | EEN 313                   | EEN 325     | Digital Signal Processing Breadth Core 2         | 3+1          | 3      | 1         |

## C. Breadth Core Electives

### 1. Telecommunication Engineering

| Sr. No. | Pre-requisite course code | Course Code | Course Title                      | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|-----------------------------------|--------------|--------|-----------|
| 1       | EEN 311                   | EEN 431     | RF and Microwave Engineering      | 3+1          | 3      | 1         |
| 2       | None                      | EET 463     | Optical Fiber Communication       | 3+1          | 3      | 1         |
| 3       | EEN 311                   | EET 447     | Navigation and Radar Systems      | 3+1          | 3      | 1         |
| 4       | EET 321                   | EEN 436     | Wireless and Mobile Communication | 3+1          | 3      | 1         |
| 5       | EET 321                   | EET 449     | Satellite Communications          | 3+1          | 3      | 1         |
| 6       | EEN 311                   | EET 451     | Wave Propagation and Antennas     | 3+1          | 3      | 1         |
| 7       | CEN 223                   | EET 452     | Multimedia Communications         | 3+1          | 3      | 1         |

|    |         |         |                                                |     |   |   |
|----|---------|---------|------------------------------------------------|-----|---|---|
| 8  | None    | CSC 453 | Information Theory                             | 3+1 | 3 | 1 |
| 9  | CEN223  | EEN 434 | Computer Networks                              | 3+1 | 3 | 1 |
| 10 | EET 321 | EET 411 | Digital Communications                         | 3+1 | 3 | 1 |
| 11 | None    | EET 456 | Telecom Transmission and Switching Systems     | 3+0 | 3 | 0 |
| 12 | EEN 313 | CEN 444 | Digital Image Processing                       | 3+0 | 3 | 0 |
| 13 | CEN 120 | CEN 441 | FPGA- Based System Design                      | 3+1 | 3 | 1 |
| 14 | EEN 224 | EEN 469 | Linear Integrated Circuits and Applications    | 3+1 | 3 | 1 |
| 15 | EEN 224 | EEN 316 | Instrumentation and measurement                | 3+1 | 3 | 1 |
| 16 | None    | EET 471 | Emerging Wireless Technologies and RF planning | 3+0 | 3 | 0 |
| 17 | None    | EET 472 | Telecommunication policies and standards       | 3+0 | 3 | 0 |
| 18 | None    | EET 462 | Cryptography and Network Security              | 3+0 | 3 | 0 |
| 19 | None    | EET 459 | Introduction to Block chain                    | 3+0 | 3 | 0 |
| 20 | CEN 222 | ITC 411 | Cyber Security                                 | 3+0 | 3 | 0 |

## 2. Electronics Engineering

| Sr. No. | Pre-requisite course code | Course Code | Course Title                    | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|---------------------------------|--------------|--------|-----------|
| 1       | EEN 224                   | EEN 316     | Instrumentation and measurement | 3+1          | 3      | 1         |
| 2       | EEN 224                   | EEN 462     | Integrated Electronics          | 3+1          | 3      | 1         |

|    |         |         |                                           |     |   |   |
|----|---------|---------|-------------------------------------------|-----|---|---|
| 3  | None    | EEN 441 | Industrial Process Control                | 3+1 | 3 | 1 |
| 4  | EEN 224 | EEN 442 | Digital Electronics                       | 3+1 | 3 | 1 |
| 5  | EEN 224 | EEN 444 | Opto Electronics                          | 3+1 | 3 | 1 |
| 6  | EEN 224 | CEN 452 | VLSI Design                               | 3+1 | 3 | 1 |
| 7  | EEN 224 | EEN 445 | Industrial Electronics                    | 3+1 | 3 | 1 |
| 8  | CEN 120 | CEN 442 | Digital System Design                     | 3+1 | 3 | 1 |
| 9  | EEN 224 | EEN 469 | Linear Integrated Circuits & Applications | 3+1 | 3 | 1 |
| 10 | EEN 224 | EEN 466 | Introduction to Nano Technology           | 3+0 | 3 | 0 |
| 11 | EEN 311 | EET 451 | Wave Propagation and Antennas             | 3+1 | 3 | 1 |
| 12 | EEN 313 | CEN 444 | Digital Image Processing                  | 3+0 | 3 | 0 |
| 13 | EEN 224 | EEN 435 | Solid State Devices                       | 3+1 | 3 | 1 |
| 14 | EEN 412 | EEN 437 | Digital Control Systems                   | 3+1 | 3 | 1 |
| 15 | EEN 219 | EEN 433 | Power Distribution and Utilization        | 3+1 | 3 | 1 |
| 16 | CEN 120 | CEN 441 | FPGA- Based System Design                 | 3+1 | 3 | 1 |
| 17 | EEN 312 | EEN 420 | Industrial Automation                     | 3+1 | 3 | 1 |
| 18 | EEN 224 | EEN 471 | Microelectronics Technology               | 3+1 | 3 | 1 |
| 19 | EEN 311 | EEN 431 | RF and Microwave Engineering              | 3+1 | 3 | 1 |
| 20 | EEN 325 | ESC 471 | Biomedical Instrumentation                | 3+1 | 3 | 1 |
| 21 | None    | CEN 223 | Computer Communication & Networking       | 3+1 | 3 | 1 |
| 22 | None    | ESC 472 | Medical Robots                            | 3+0 | 3 | 0 |
| 23 | CSC 411 | CEN 458 | Robotics                                  | 3+1 | 3 | 1 |

### 3. Power Engineering

| Sr. No. | Pre-requisite course code | Course Code | Course Title                              | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|-------------------------------------------|--------------|--------|-----------|
| 1       | EEN 224                   | EEN 316     | Instrumentation and Measurements          | 3+1          | 3      | 1         |
| 2       | EEN 219                   | EEP 441     | Advanced Electrical Machines              | 3+1          | 3      | 1         |
| 3       | EEN 219                   | EEP 442     | Power Generation                          | 3+1          | 3      | 1         |
| 4       | EEN 433                   | EEP 443     | Electrical Power Transmission             | 3+1          | 3      | 1         |
| 5       | EEN 224                   | EEP 468     | Power Electronics                         | 3+1          | 3      | 1         |
| 6       | EEP 331                   | EEP 444     | Power System Protection                   | 3+1          | 3      | 1         |
| 7       | EEP 331                   | EEP 445     | Power System Stability & Control          | 3+0          | 3      | 0         |
| 8       | EEN 219                   | EEP 471     | Electrical Machine Design and Maintenance | 3+1          | 3      | 1         |
| 9       | EEN 211                   | EEP 446     | High Voltage Engineering                  | 3+1          | 3      | 1         |
| 10      |                           | EEP 448     | Renewable Energy Systems                  | 3+0          | 3      | 0         |
| 11      | EEN 313                   | EEN 325     | Digital Signal Processing                 | 3+1          | 3      | 1         |
| 12      | EEN 224                   | EEP 472     | Industrial Drives                         | 3+1          | 3      | 1         |
| 13      | EEP 331                   | EEP 475     | FACTS and HVDC Transmission               | 3+1          | 3      | 1         |
| 14      | None                      | CEN 223     | Computer Communication & Networking       | 3+1          | 3      | 1         |
| 15      | None                      | EEP 474     | Smart Grid                                | 3+0          | 3      | 0         |
| 16      | EEN 412                   | EEN 437     | Digital Control System                    | 3+1          | 3      | 1         |

|    |         |         |                                             |     |   |   |
|----|---------|---------|---------------------------------------------|-----|---|---|
| 17 | EET 321 | EET 474 | Digital Communication System                | 3+1 | 3 | 1 |
| 18 | EEN 224 | EEN 469 | Linear Integrated Circuits and Applications | 3+1 | 3 | 1 |
| 19 | EEN 224 | EEP 474 | PLC and Industrial Drives                   | 3+1 | 3 | 1 |
| 20 | EEN 224 | EEN 445 | Industrial Electronics                      | 3+1 | 3 | 1 |
| 21 | None    | EEP 331 | Power System Analysis                       | 3+0 | 3 | 0 |
| 22 | None    | EEN 434 | Computer Networks                           | 3+1 | 3 | 1 |

#### D. IDEE Electives

| Sr. No. | Pre-requisite course code | Course Code | Course Title                           | Credit Hours | Theory | Practical |
|---------|---------------------------|-------------|----------------------------------------|--------------|--------|-----------|
| 1       | None                      | ESC 111     | Basic Mechanical Engr.                 | 2+0          | 2      | 0         |
| 2       | None                      | GSC 104     | Surveying and Leveling                 | 2+0          | 2      | 0         |
| 3       | None                      | GSC 486     | Geographical Information System        | 2+0          | 2      | 0         |
| 4       | None                      | ENV 440     | Energy and Environment                 | 2+0          | 2      | 0         |
| 5       | None                      | EEA 430     | Introduction to Mechatronics           | 3+0          | 3      | 0         |
| 6       | None                      | EEN 438     | Introduction to Biomedical Engineering | 3+0          | 3      | 0         |
| 7       | None                      | CSC 320     | Operating Systems                      | 3+0          | 3      | 0         |
| 8       | None                      | CSC 419     | Introduction to Machine Learning       | 3+0          | 3      | 0         |
| 9       | None                      | CSC 488     | Big Data Analytics                     | 3+0          | 3      | 0         |
| 10      | None                      | CSC 410     | Introduction to Cloud Computing        | 3+0          | 3      | 0         |
| 11      | None                      | CSC 412     | Artificial Intelligence                | 3+0          | 3      | 0         |
| 12      | None                      | EET 461     | Industrial Internet Of Things (IIoTs)  | 3+0          | 3      | 0         |
| 13      | None                      | EET 451     | Introduction to System Engineering     | 3+0          | 3      | 0         |
| 14      | None                      | CSC-464     | Computer Vision                        | 3+0          | 3      | 0         |
| 15      | -                         | EEN 462     | Fundamentals of Quantum Computing      | 3+1          | 2      | 1         |

## MS EE

**Campus:** Islamabad & Karachi

**Regular Programme Duration:** 2 Years (4 Semesters)

**Available Specialization:**

Power System, Automation & Control, Communication Systems and IoT Networks (Islamabad/Karachi Campus)

**Program Timing:** Evening (Islamabad/Karachi Campus), Weekend (Karachi Campus)

**Eligibility Criteria:**

Four Year Degree in Electrical/Electronic/Computer or Allied Discipline with minimum CGPA 2.0/4.0 or 50% marks. Students will be required to complete deficiency in earned credit hours.

Graduates from other engineering disciplines or 16-year degree in Computer Science, Electronics, Physics or any related discipline may be eligible for this program, subject to passing the prerequisite courses with minimum GPA 3.0 of 4.0 in each course, as recommended by the departmental graduate committee at admission time.

## ROADMAP

| Semester - I |         |                                                        |
|--------------|---------|--------------------------------------------------------|
| i.           | ESC 501 | Core – I Research Methodology (University Requirement) |
| ii.          |         | Core – II                                              |
|              |         | Core – III                                             |
| Semester-II  |         |                                                        |
| i.           |         | Core-IV                                                |
| ii.          |         | Core-V                                                 |
| iii.         |         | Elective-I                                             |
| Semester-III |         |                                                        |
| i.           |         | Elective-II                                            |
| ii.          |         | Thesis-I/ Elective-IV                                  |
| Semester-IV  |         |                                                        |
| i.           |         | Elective-III                                           |
| ii.          |         | Thesis-II/ Elective-V                                  |



## Core Courses

### MS EE (Automation and Control)

| Course Code | Core Course Title                                 | Credit Hours |
|-------------|---------------------------------------------------|--------------|
| ESC 501     | Research Methodology                              | 3            |
| EEN 510     | Stochastic Process                                | 3            |
| EET 724     | Optimization Techniques in Electrical Engineering | 3            |
| EEA 600     | Artificial Intelligence for Control Systems       | 3            |
| EEN 726     | Modern Control Theory                             | 3            |

### Elective Courses

| Course Code | Elective Course Title                                   | Credit Hours |
|-------------|---------------------------------------------------------|--------------|
| EEA 713     | Robust Multivariable Control System                     | 3            |
| EEA 703     | Dynamic Modeling system                                 | 3            |
| EEA 749     | Fuzzy Logic and Intelligent Control Systems             | 3            |
| EEA 509     | Nonlinear Control Systems                               | 3            |
| EEA 704     | Adaptive Control Systems                                | 3            |
| CEN 758     | Robotics and Intelligent Sensors                        | 3            |
| CEN 722     | Advanced Interfacing Techniques                         | 3            |
| EEA 540     | Mechatronics                                            | 3            |
| EEN 506     | Advanced Solid State Devices                            | 3            |
| EEA 601     | Industrial Automation Technologies                      | 3            |
| EEA 602     | System Integration                                      | 3            |
| EEA 715     | Industrial Project Management                           | 3            |
| EEA 716     | Control Instrumentation and Robotics                    | 3            |
| EEA 717     | Process Control Commissioning and Production Management | 3            |

### MS EE (Power Systems)

| Course Code | Core Course Title                                 | Credit Hours |
|-------------|---------------------------------------------------|--------------|
| ESC 501     | Research Methodology                              | 3            |
| EEN 510     | Stochastic Process                                | 3            |
| EET 724     | Optimization Techniques in Electrical Engineering | 3            |
| EEP 558     | Power Transmission and Distribution               | 3            |



|         |                                      |   |
|---------|--------------------------------------|---|
| EEP 559 | Power Generation and Plant Operation | 3 |
|---------|--------------------------------------|---|

### Elective Courses

| Course Code | Elective Course Title                        | Credit Hours |
|-------------|----------------------------------------------|--------------|
| EEP 716     | Advanced Power System Analysis               | 3            |
| EEP 717     | Advanced Power System Planning               | 3            |
| EEP 718     | Advanced Power System Protection             | 3            |
| EEP 561     | High Voltage Engineering Design              | 3            |
| EEP 754     | Smart Grid System Operation                  | 3            |
| EEP 521     | Design of Electrical Machines                | 3            |
| EEP 564     | Hydel Power Generation                       | 3            |
| EEP 565     | Integration of Distributed Generation        | 3            |
| EEP 566     | Power System Reliability                     | 3            |
| EEP 719     | Advanced Topics in Power Systems Engineering | 3            |
| EEP 514     | Renewable Energy                             | 3            |
| EEP 757     | Non-Conventional Energy Systems              | 3            |
| EEP 516     | Solar Power Generation                       | 3            |
| EEP 517     | Wind Power Generation                        | 3            |
| EEP 519     | Hybrid Power Systems                         | 3            |
| EEP 714     | Advanced Topics in Renewable Energy          | 3            |
| EEP 723     | Thermal and Nuclear Power Generation         | 3            |
| EEP 720     | Computer Methods in Power Systems            | 3            |
| EEP 721     | Insulation Co-ordination in Power Systems    | 3            |
| EEP 712     | Advanced Power Electronics                   | 3            |
| EEP 502     | Advanced Power System Operation and Control  | 3            |
| EEP 780     | EMS & SCADA                                  | 3            |
| EEA 713     | Robust Multivariable Control System          | 3            |
| EEA 749     | Fuzzy Logic and Intelligent Control Systems  | 3            |
| EEA 509     | Nonlinear Control Systems                    | 3            |



## MS EE (Communication Systems & IoT Networks)

### Core Courses

| Course Code | Core Course Title                                 | Credit Hours |
|-------------|---------------------------------------------------|--------------|
| ESC 501     | Research Methodology                              | 3            |
| EEN 510     | Stochastic Process                                | 3            |
| EET 724     | Optimization Techniques in Electrical Engineering | 3            |
| EEN 712     | Advanced Digital Communication Systems            | 3            |
| EET 603     | Communication Technologies & Platforms for IoT    | 3            |

### Elective Courses

| Course Code | Elective Course Title                            | Credit Hours |
|-------------|--------------------------------------------------|--------------|
| EET 729     | Wireless Sensor Networks                         | 3            |
| EET 762     | Communication Network Architecture and Protocols | 3            |
| EET 766     | RF System Engineering and Design                 | 3            |
| EET 750     | Antennas Theory, Design and Applications         | 3            |
| EET 768     | Cognitive & software Defined Radio               | 3            |
| EET 755     | Wireless Communication Techniques                | 3            |
| EEN 740     | Embedded System Design for Telecommunications    | 3            |
| EET 756     | Telecommunication Switching Systems              | 3            |
| EET 702     | Advanced Network Security                        | 3            |
| CEN 745     | Advanced Digital Image Processing                | 3            |
| ESC 716     | Advanced Topics in Wireless & Networking         | 3            |
| EEN 725     | Advanced Digital Signal Processing               | 3            |
| EET 560     | Telecommunication Network Management             | 3            |
| EET 555     | Wireless & Mobile Communications                 | 3            |
| EET 552     | Multimedia Networking                            | 3            |
| EET 553     | Information Theory and Coding                    | 3            |
| EET 546     | Radio & Microwave Engineering                    | 3            |
| EET 555     | Wireless & Mobile Communications                 | 3            |
| EET 558     | 5G And Internet of Things                        | 3            |

|         |                                   |   |
|---------|-----------------------------------|---|
| EET 559 | Programming of Internet of Things | 3 |
| EET 601 | Narrow Band IoT Systems           | 3 |
| EET 731 | IoT for Industry 4.0              | 3 |
| EET 730 | AI for Internet of Things         | 3 |
| EET 603 | SDN for Internet of Things        | 3 |
| EET 728 | Security for Internet of Things   | 3 |
| EET 602 | Ultra-Low Power Radios for IoT    | 3 |

## PhD – EE

**Campus:** Islamabad & Karachi

**Regular Program Duration:** 3 Years (6 Semesters)

**Available Specialization:**

Electrical Engineering related field of studies

**Program Timing:** Evening

**Entry Requirements:**

- 18 Years Education (MS/MPhil/equivalent) in the relevant discipline from an HEC recognized university with minimum CGPA 3.0/4.0 (Semester System) or 60% marks (Annual System).
- NTS-GAT (Subject) or GRE (Subject) Test passed with minimum 60% marks or BU Admission Test (70% passing marks).
- Initial Research Proposal/Statement of Purpose is required at the time of PhD admission.

## ROADMAP

### Semester 1

| Sr.# | Course Code | Course Title                    | Credit Hours |
|------|-------------|---------------------------------|--------------|
| 1    | ESC 801     | Research Methods in PhD Studies | 3            |
| 2    |             | Elective I                      | 3            |
| 3    |             | Elective II                     | 3            |

## Semester 2

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    |             | Elective III | 3            |
| 2    |             | Elective IV  | 3            |
| 3    |             | Elective V   | 3            |

## Semester 3

| Sr.# | Course Code | Course Title       | Credit Hours |
|------|-------------|--------------------|--------------|
| 1    |             | Comprehensive exam | 0            |
| 2    | THS 900     | PhD Thesis         | 9            |

## Semester 4

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

## Semester 5

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

## Semester 6

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

## List of Electives Courses

| Sr.# | Course Code | Course Title          | Credit Hours |
|------|-------------|-----------------------|--------------|
| 1    | EEN 827     | Modern Control Theory | 3            |



|           |         |                                                               |   |
|-----------|---------|---------------------------------------------------------------|---|
| <b>2</b>  | EEN 828 | Advanced Nonlinear Control Systems                            | 3 |
| <b>3</b>  | EEP 801 | Power Management in Wired and Wireless communications Systems | 3 |
| <b>4</b>  | EEP 802 | Advanced Low Power System Design                              | 3 |
| <b>5</b>  | EEP 803 | Advanced Power System Deregulation                            | 3 |
| <b>6</b>  | EEN 829 | Design and Applications of Real Time DSP Systems              | 3 |
| <b>7</b>  | EET 830 | Emerging Trend in Cognitive Cooperative Networks              | 3 |
| <b>8</b>  | EET 831 | Modern Digital Communications Systems                         | 3 |
| <b>9</b>  | EEN 830 | Dynamic Systems Modeling & Simulation                         | 3 |
| <b>10</b> | EET 832 | Advance topics in Network Security                            | 3 |
| <b>11</b> | EET 833 | Smart Antennas                                                | 3 |
| <b>12</b> | EET 827 | Advanced Wireless Communication Systems                       | 3 |
| <b>13</b> | EEP 804 | Advanced Power System Stability and Dynamics                  | 3 |
| <b>14</b> | EET 834 | Emerging Trend in Optical Fiber Networks                      | 3 |
| <b>15</b> | EEP 805 | Artificial Intelligence Techniques in Power Systems Design    | 3 |

|           |         |                                                       |   |
|-----------|---------|-------------------------------------------------------|---|
| <b>17</b> | EET 835 | Advance Topics in 5G and Beyond Communications        | 3 |
| <b>18</b> | EEN 831 | Statistical Signal Processing                         | 3 |
| <b>19</b> | CEN 807 | Distributed Systems Architecture and Design           | 3 |
| <b>20</b> | CEN 808 | Advanced Techniques in System Modeling and Simulation | 3 |
| <b>21</b> | CEN 821 | Microprocessor System Optimization and customization  | 3 |
| <b>22</b> | CEN 840 | Advanced Embedded System Design                       | 3 |
| <b>23</b> | CEN 842 | Digital Systems Integration and Design                | 3 |
| <b>24</b> | CEN 845 | Image Analysis and Pattern Recognition                | 3 |
| <b>25</b> | CEN 852 | Modern Approaches in VLSI System Design               | 3 |
| <b>26</b> | CEN 853 | Real-Time Systems Engineering & Design                | 3 |
| <b>27</b> | CEN 855 | Advanced Parallel Processing Computer Systems         | 3 |
| <b>28</b> | DSC 807 | Advanced Deep Learning                                | 3 |
| <b>29</b> | CSC 819 | Research Trends in Machine Learning                   | 3 |



|           |         |                                                                  |   |
|-----------|---------|------------------------------------------------------------------|---|
| <b>30</b> | CSC 851 | Advanced Pattern Recognition                                     | 3 |
| <b>31</b> | CSC 864 | Advanced Computer Vision                                         | 3 |
| <b>32</b> | CSC 881 | Advanced Cloud Computing                                         | 3 |
| <b>33</b> | SEN 862 | Emerging Trends in Big Data Analytics                            | 3 |
| <b>34</b> | SEN 810 | Advanced Neural Networks & Fuzzy Logic                           | 3 |
| <b>35</b> | EET 829 | Optimization Techniques                                          | 3 |
| <b>36</b> | EEN 832 | Fuzzy Logic and Neural Network Based Intelligent control systems | 3 |
| <b>37</b> | EEN 833 | Advanced Computer vision for Robotics                            | 3 |
| <b>38</b> | EEN 834 | Human-Robot Interaction                                          | 3 |
| <b>39</b> | EEN 835 | Medical Devices & Robotics                                       | 3 |
| <b>40</b> | EET 836 | AI for Future Communication Systems                              | 3 |
| <b>41</b> | EET 837 | Advanced Data Communication Systems                              | 3 |
| <b>42</b> | EEP 806 | Modern Trends in Power system Analysis                           | 3 |
| <b>43</b> | EEP 807 | Modern Power System Protection                                   | 3 |



|           |         |                                             |   |
|-----------|---------|---------------------------------------------|---|
| <b>44</b> | CEN 820 | High Performance Computer Architecture      | 3 |
| <b>45</b> | CEN 841 | ASIC Design Methodology                     | 3 |
| <b>46</b> | CEN 854 | MOS VLSI Circuit Design                     | 3 |
| <b>47</b> | DSC 800 | Advanced Data Analytics                     | 3 |
| <b>48</b> | CSC 800 | Advanced AI Networking                      | 3 |
| <b>49</b> | SEN 809 | Internet of Things: Design and Applications | 3 |
| <b>50</b> | SEN 808 | Computer and Cybersecurity                  | 3 |

### **List of Deficiency Courses**

Deficiency courses can be selected from 700-level courses of MS EE Roadmap, as recommended by the Admission Committee.

## BS - ROBOTICS & INTELLIGENT

**Program:** A Bachelor of Science in Robotics & Intelligent Systems – BS RIS

**Department:** Electrical Engineering

**Duration:** 2 Years, 8 Semesters

**Campus:** Islamabad & Karachi

### Eligibility Criteria:

Minimum 50% marks in Intermediate (HSSC) Examination (PreEngg./Comp Science/ Pre- Medical/DAE (all relevant field)) or equivalent qualifications with Mathematics certified by IBCC.

Deficiency: For Pre-Medical students, the following deficiency course of mathematics will be taught during the first year.

- Fundamentals of Mathematics I GSC 103 (3 Credit Hours)
- Fundamentals of Mathematics II GSC 104 (3 Credit Hours)

### Semester-1

| Sr. No. | Pre-requisite Course Code | Course Code         | Course Title                                   | Credit Hours |
|---------|---------------------------|---------------------|------------------------------------------------|--------------|
| 1       | None                      | GSC 114             | Applied Physics                                | 2            |
| 2       | None                      | GSL 113             | Applied Physics Lab                            | 1            |
| 3       | None                      | GSC 110             | Applied Calculus and Analytical Geometry       | 3            |
| 4       | None                      | ISL 101/<br>HSS 116 | Islamic Studies/ Ethics (For non-Muslims only) | 2            |
| 5       | None                      | ENG 101             | Functional English                             | 3            |

|                           |      |         |                            |                   |
|---------------------------|------|---------|----------------------------|-------------------|
| <b>6</b>                  | None | CSC 110 | Computing Fundamentals     | 2                 |
| <b>7</b>                  | None | CSL 110 | Computing Fundamentals Lab | 1                 |
| <b>8</b>                  | None | EEL 121 | Engineering Drawing & CAD  | 1                 |
| <b>9</b>                  | None | ISL 107 | Tajweed                    | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |      |         |                            | <b>15</b>         |

\*Only for Muslim students

## Semester-2

| Sr. No.  | Pre-requisite Course Code | Course Code | Course Title                              | Credit Hours |
|----------|---------------------------|-------------|-------------------------------------------|--------------|
| <b>1</b> |                           |             | Social Sciences Elective-I                | 2            |
| <b>2</b> | None                      | GSC 123     | Linear Algebra and Differential Equations | 3            |
| <b>3</b> | None                      | GSC 115     | Circuit Analysis                          | 3            |
| <b>4</b> | None                      | GSL 115     | Circuit Analysis Lab                      | 1            |
| <b>5</b> | None                      | CSC 113     | Computer Programming                      | 3            |
| <b>6</b> | None                      | CSL 113     | Computer Programming Lab                  | 1            |
| <b>7</b> | None                      | MSC 231     | Engineering Mechanics                     | 3            |
| <b>8</b> |                           |             | Management Elective                       | 2            |

|                           |      |         |                       |                      |
|---------------------------|------|---------|-----------------------|----------------------|
| <b>9</b>                  | None | ISL 108 | Understanding Quran-I | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |      |         |                       | <b>18</b>            |

\*Only for Muslim students

### Semester-3

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>             | <b>Credit Hours</b>  |
|----------------|----------------------------------|--------------------|---------------------------------|----------------------|
| <b>1</b>       | None                             | CEN 120            | Digital Logic Design            | 3                    |
| <b>2</b>       | None                             | CEL 120            | Digital Logic Design Lab        | 1                    |
| <b>3</b>       | CSC 113                          | CSC 210            | Object Oriented Programming     | 3                    |
| <b>4</b>       | CSC 113                          | CSL 210            | Object Oriented Programming Lab | 1                    |
| <b>5</b>       | None                             | RIS 231            | Introduction to Robotics        | 3                    |
| <b>6</b>       | None                             | RIL 231            | Introduction to Robotics Lab    | 1                    |
| <b>7</b>       | None                             | GSC 122            | Probability and Statistics      | 3                    |
| <b>8</b>       | None                             | EEL 113            | Engineering Workshop            | 1                    |
| <b>9</b>       | None                             | ENG 134            | Communication Skills            | 2                    |
| <b>10</b>      | ISL 108                          | ISL 109            | Understanding Quran-II          | 1<br>Contact<br>Hour |

|                           |           |
|---------------------------|-----------|
| <b>Total Credit Hours</b> | <b>18</b> |
|---------------------------|-----------|

\*Only for Muslim students

#### **Semester-4**

| <b>Sr. No.</b>            | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                      | <b>Credit Hours</b> |
|---------------------------|----------------------------------|--------------------|------------------------------------------|---------------------|
| <b>1</b>                  | GSC 110                          | GSC 220            | Complex Variable & Transforms            | 3                   |
| <b>2</b>                  |                                  |                    | IDEE – I                                 | 3                   |
| <b>3</b>                  |                                  |                    | IDEE - I Lab                             | 1                   |
| <b>4</b>                  | CSC 210                          | AIC 201            | Artificial Intelligence                  | 3                   |
| <b>5</b>                  | CSC 210                          | AIL 201            | Artificial Intelligence Lab              | 1                   |
| <b>6</b>                  | None                             | PAK 105            | Pakistan Studies & Global Perspective    | 2                   |
| <b>7</b>                  | None                             |                    | Civics and Community Engagement Elective | 2                   |
| <b>8</b>                  | None                             | ENG 320            | Technical Writing &                      | 3                   |
| <b>9</b>                  | ISL 109                          | ISL 110            | Understanding Quran-III                  | 1<br>Contact Hour   |
| <b>Total Credit Hours</b> |                                  |                    |                                          | <b>18</b>           |

\*Only for Muslim students

### Semester-5

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                     | Credit Hours   |
|--------------------|---------------------------|-------------|----------------------------------|----------------|
| 1                  |                           |             | IDEE – II                        | 3              |
| 2                  |                           |             | IDEE - II Lab                    | 1              |
| 3                  | CSC 210                   | RIS 361     | Robotic System & Programming     | 3              |
| 4                  | CSC 210                   | RIL 361     | Robotic System & Programming Lab | 1              |
| 5                  | GSC 220                   | EEN 412     | Linear Control System            | 3              |
| 6                  | GSC 220                   | EEL 412     | Linear Control System Lab        | 1              |
| 7                  | None                      | RIS 241     | Sensors & Actuators              | 3              |
| 8                  | None                      | RIL 241     | Sensors & Actuators Lab          | 1              |
| 9                  | ISL 110                   | ISL 111     | Understanding Quran-IV           | 1 Contact Hour |
| Total Credit Hours |                           |             |                                  | 16             |

\*Only for Muslim students

### Semester-6

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title   | Credit Hours |
|---------|---------------------------|-------------|----------------|--------------|
| 1       |                           |             | IDEE – III     | 3            |
| 2       |                           |             | IDEE - III Lab | 1            |

|                           |         |         |                             |                      |
|---------------------------|---------|---------|-----------------------------|----------------------|
| <b>3</b>                  | CEN 120 | CEN 440 | Embedded Systems Design     | 3                    |
| <b>4</b>                  | CEN 120 | CEL 440 | Embedded Systems Design Lab | 1                    |
| <b>5</b>                  | AIC 201 | RIS 364 | Machine Learning            | 3                    |
| <b>6</b>                  | AIC 201 | AIL 301 | Machine Learning Lab        | 1                    |
| <b>7</b>                  |         |         | RIS Elective I              | 3                    |
| <b>8</b>                  | ISL 111 | ISL 112 | Understanding Quran-V       | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |         |                             | <b>15</b>            |

\*Only for Muslim students

### Semester-7

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>               | <b>Credit Hours</b> |
|----------------|----------------------------------|--------------------|-----------------------------------|---------------------|
| <b>1</b>       | EEN 412                          | RIS 362            | Robot Modelling & Control         | 3                   |
| <b>2</b>       | EEN 412                          | RIL 362            | Robot Modelling & Control Lab     | 1                   |
| <b>3</b>       |                                  |                    | RIS Elective II                   | 3                   |
| <b>4</b>       |                                  |                    | RIS Elective II Lab               | 1                   |
| <b>5</b>       | AIC 301                          | RIS 474            | Introduction to Deep Learning     | 3                   |
| <b>6</b>       | AIC 301                          | RIL 474            | Introduction to Deep Learning Lab | 1                   |

|                           |         |            |            |                      |
|---------------------------|---------|------------|------------|----------------------|
| <b>7</b>                  | None    | FYP<br>400 | Project -I | 3                    |
| <b>8</b>                  | ISL 112 | ISL 113    | Seerah-I   | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |            |            | <b>15</b>            |

\*Only for Muslim students

### Semester-8

| <b>Sr.<br/>No.</b>        | <b>Pre-requisite<br/>Course Code</b> | <b>Course<br/>Code</b> | <b>Course Title</b>       | <b>Credit<br/>Hours</b> |
|---------------------------|--------------------------------------|------------------------|---------------------------|-------------------------|
| <b>1</b>                  |                                      |                        | RIS Elective III          | 3                       |
| <b>2</b>                  | RIS 231                              | RIS 481                | Machine Vision & Robotics | 3                       |
| <b>3</b>                  |                                      |                        | RIS Elective IV           | 3                       |
| <b>4</b>                  |                                      |                        | RIS Elective IV Lab       | 1                       |
| <b>5</b>                  | XXXX                                 | XXXX                   | RIS Elective V            | 3                       |
| <b>6</b>                  | None                                 | FYP<br>400             | Project-II                | 3                       |
| <b>7</b>                  | ISL 113                              | ISL 114                | Seerah-II                 | 1<br>Contact<br>Hour    |
| <b>Total Credit Hours</b> |                                      |                        |                           | <b>16</b>               |

\*Only for Muslim students

### List of Elective Courses: Interdisciplinary Courses (IDEE 12 credit hours)

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                          | Credit Hours |
|---------|---------------------------|-------------|---------------------------------------|--------------|
| 1       | CSC 210                   | CSC 221     | Data Structures & Algorithm           | 3            |
| 2       | CSC 210                   | CSL 221     | Data Structures & Algorithm Lab       | 1            |
| 3       | None                      | EEN 313     | Signal & Systems                      | 3            |
| 4       | None                      | EEL 313     | Signal & Systems Lab                  | 1            |
| 5       | GSC 115                   | EEN 224     | Electronic Devices and Circuits       | 3            |
| 6       | GSC 115                   | EEL 224     | Electronic Devices and Circuits Lab   | 1            |
| 7       | GSC 115                   | EEP 468     | Power Electronics                     | 3            |
| 8       | GSC 115                   | EEL 468     | Power Electronics Lab                 | 1            |
| 9       | None                      | CEN 223     | Computer Communication & Networks     | 3            |
| 10      | None                      | CEL 223     | Computer Communication & Networks Lab | 1            |
| 11      | GSC 114                   | EEN 312     | Electrical Machines                   | 3            |
| 12      | GSC 114                   | EEL 312     | Electrical Machines Lab               | 1            |
| 13      | GSC 114                   | EEN 316     | Instrumentation and measurement       | 3            |

**List of Elective Courses:**  
**Robotics & Intelligent Systems Elective Courses**  
**(5 courses 17 credit hours)**

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                         | Credit Hours |
|---------|---------------------------|-------------|--------------------------------------|--------------|
| 1       | CSC 113                   | RIS 363     | Internet of things (IoT)             | 3            |
| 2       | RIS 241                   | RIS 482     | Introduction to Haptics              | 3            |
| 3       | RIS 362                   | RIS 483     | Introduction to Humanoid Robots      | 3            |
| 4       | RIS 362                   | RIS 484     | Advanced Modelling of Robotics       | 3            |
| 5       | GSC 123                   | RIS 485     | Optimal Kinematic Design of Robots   | 3            |
| 6       | RIS 361                   | RIS 486     | Distributive Robotics/Swarm Robotics | 3            |
| 7       | None                      | CSC 410     | Introduction to Cloud Computing      | 3            |
| 8       | GSC 113                   | RIS 489     | Mechanics of Materials               | 3            |
| 9       | RIS 231                   | RIS 486     | Swarm Robotics                       | 3            |
| 10      | None                      | RIS 471     | Robot Process Automation             | 3            |
| 11      | None                      | RIS 471     | Robot Process Automation Lab         | 1            |
| 12      | None                      | RIS 473     | Introduction to R Programming        | 3            |
| 13      | None                      | RIL 473     | Introduction to R Programming Lab    | 1            |
| 14      | CEN 444                   | CSC 464     | Computer Vision                      | 3            |

|           |         |         |                               |   |
|-----------|---------|---------|-------------------------------|---|
| <b>15</b> | CEN 444 | CSL 464 | Computer Vision Lab           | 1 |
| <b>16</b> | AIC 201 | RIS 475 | Human Robot Interaction       | 3 |
| <b>17</b> | AIC 201 | RIL 475 | Human Robot Interaction Lab   | 1 |
| <b>18</b> | AIC 201 | RIS 476 | Artificial Neural Network     | 3 |
| <b>19</b> | AIC 201 | RIL 476 | Artificial Neural Network Lab | 1 |
| <b>20</b> | AIC 201 | RIS 487 | AI for Computer Games         | 3 |
| <b>21</b> | AIC 201 | RIL 487 | AI for Computer Games Lab     | 1 |
| <b>22</b> | AIC 301 | RIS 488 | Chatbots                      | 3 |
| <b>23</b> | AIC 301 | RIL 488 | Chatbots Lab                  | 1 |

### **Social Science Electives (2 credit hours)**

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                     | <b>Credit Hours</b> |
|----------------|----------------------------------|--------------------|-----------------------------------------|---------------------|
| <b>1</b>       | None                             | HSS 424            | Engineering Ethics                      | 2                   |
| <b>2</b>       | None                             | HSS 217            | Introduction to Sociology               | 2                   |
| <b>3</b>       | None                             | HSS 119            | Introduction to International Relations | 2                   |



### Management Science Electives (2 credit hours)

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title             | Credit Hours |
|--------------------|---------------------------|-------------|--------------------------|--------------|
| 1                  | None                      | HSS 423     | Entrepreneurship         | 2            |
| 2                  | None                      | MGT 421     | Leadership               | 2            |
| 3                  | None                      | EMG 222     | Principles of Management | 2            |
| 4                  | None                      | HSS 412     | Engineering Economics    | 2            |
| Total Credit Hours |                           |             |                          | 8            |



## DEPARTMENT OF EARTH & ENVIRONMENTAL SCIENCES

### Programs offered:

- BS (Environmental Sciences)
- BS (Geology)
- BS (Geo Physics)
- BS (Geo Sciences)
- BS (Remote Sensing & GIS)
- MS (Environmental Sciences)
- MS (Geology)
- MS (Geo Physics)
- PhD (Environmental Sciences)
- PhD (Geology)
- PhD (Geo Physics)

### BS – Environmental Sciences (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Programme Timing:** Morning

**Entry Requirements:**

F.Sc (Pre-Engg/Pre-Medical/ A level, ICS, Engg. Diploma or equivalent) with 50% marks.

## ROADMAP

### Semester 1

| Sr. No.                   | Pre-requisite Course Code | Course Code     | Course Title                                | Credit Hours   |
|---------------------------|---------------------------|-----------------|---------------------------------------------|----------------|
| 1.                        |                           | PAK 103         | Pakistan Studies & Global Perspective       | 2              |
| 2.                        |                           | ISL 101         | Islamic Studies                             | 2              |
| 3.                        |                           | ENG 101         | Functional English                          | 3              |
| 4.                        |                           | MAT 105/BIO 105 | Mathematics/Biology                         | 0              |
| 5.                        |                           | CSC 102         | Introduction to Computers & Programming     | 2              |
|                           |                           | CSL 102         | Introduction to Computers & Programming lab | 1              |
| 6.                        |                           | PHY 103         | Physics                                     | 2              |
|                           |                           | PHL 103         | Physics Lab                                 | 1              |
| 7.                        |                           | ENV 105         | Introduction to Environmental Sciences      | 3              |
| 8.                        | None                      | ISL 107         | Tajweed                                     | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |                 |                                             | <b>16</b>      |

\*Only for Muslim students

## Semester 2

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                              | Credit Hours   |
|---------------------------|---------------------------|-------------|-------------------------------------------|----------------|
| 1.                        |                           | GSC 340     | Chemistry                                 | 2              |
|                           |                           | GSL 105     | Chemistry Lab                             | 1              |
| 2.                        |                           | HSS 320     | Technical Writing and Presentation Skills | 3              |
| 3.                        |                           | ENV 206     | Environmental Statistics                  | 3              |
| 4.                        |                           | GEO 110     | Fundamental of Geography & Geomorphology  | 3              |
| 5.                        |                           | ENV 230     | Environmental Issues                      | 3              |
| 6.                        |                           | ENV 110     | Environmental Biology                     | 3              |
| 7.                        | ISL 107                   | ISL 108     | Understanding Quran – IO                  | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                           | 18             |

\*Only for Muslim students

## Semester 3

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title | Credit Hours |
|---------|---------------------------|-------------|--------------|--------------|
| 1.      |                           | GEO 201     | Museology    | 2            |

|                           |         |         |                                 |                   |
|---------------------------|---------|---------|---------------------------------|-------------------|
| 2.                        |         | GEO 206 | Civics and Community Engagement | 2                 |
| 3.                        |         | PSY 102 | Introduction to Psychology      | 2                 |
| 4.                        | CHM 105 | ENV 211 | Environmental Chemistry         | 2                 |
|                           |         | ENL 211 | Environmental Chemistry Lab     | 1                 |
| 5.                        |         | ENV 205 | Fundamentals of Ecology         | 3                 |
| 6.                        |         | ENV 215 | Social Theory of Environment    | 3                 |
| 7.                        |         | ENV 221 | Environmental Microbiology      | 2                 |
|                           |         | ENL 221 | Environmental Microbiology Lab  | 1                 |
| 8.                        | ISL 108 | ISL 109 | Understanding Quran – II        | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                 | 18                |

\*Only for Muslim students

#### Semester 4

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                 | Credit Hours |
|---------|---------------------------|-------------|------------------------------|--------------|
| 1.      |                           | HSS 423     | Entrepreneurship             | 2            |
| 2.      |                           | ENV 306     | Environmental Monitoring     | 2            |
|         |                           | ENL 306     | Environmental Monitoring Lab | 1            |

|                           |         |         |                                 |                   |
|---------------------------|---------|---------|---------------------------------|-------------------|
| <b>3.</b>                 |         | GEO 207 | Application of ICT              | 2                 |
|                           |         | GEL 207 | Application of ICT Lab          | 1                 |
| <b>4.</b>                 |         | ENV 315 | Environmental Management System | 3                 |
| <b>5.</b>                 | ENV 105 | ENV 236 | Introduction to Climate Change  | 3                 |
| <b>6.</b>                 |         | ENV 310 | Environmental Toxicology        | 3                 |
| <b>7.</b>                 | ISL 109 | ISL 110 | Understanding Quran – III       | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                 | <b>17</b>         |

\*Only for Muslim students

### Semester 5

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                        | <b>Credit Hours</b> |
|----------------|----------------------------------|--------------------|--------------------------------------------|---------------------|
| <b>1.</b>      | ENV 220                          | ENV 320            | Environmental Biotechnology                | 3                   |
| <b>2.</b>      |                                  | ENV 330            | Environmental & Natural Resource Economics | 3                   |
| <b>3.</b>      |                                  | ENV 345            | Environmental Hazard & Management          | 3                   |
| <b>4.</b>      |                                  | ENV 325            | Environmental Engineering                  | 3                   |

|                           |         |         |                                                     |                   |
|---------------------------|---------|---------|-----------------------------------------------------|-------------------|
| 5.                        |         | ENV 336 | Analytical Techniques in Environmental Sciences     | 2                 |
|                           |         | ENL 336 | Analytical Techniques in Environmental Sciences Lab | 1                 |
| 6.                        |         | GEO 305 | Environmental Geology                               | 3                 |
| 7.                        | ISL 110 | ISL 111 | Understanding Quran – IV                            | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                                     | 18                |

\*Only for Muslim students

### Semester 6

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                      | Credit Hours |
|---------|---------------------------|-------------|-----------------------------------|--------------|
| 1.      | -                         | -           | Elective-I                        | 3            |
| 2.      |                           | ENV 341     | Solid Waste Management            | 2            |
|         |                           | ENL 341     | Solid Waste Management Lab        | 1            |
| 3.      |                           | ENV 361     | Natural Resource Management       | 3            |
| 4.      |                           | GEO 351     | Natural Disaster Management       | 3            |
| 5.      |                           | ENV 351     | Environmental Sciences Field Work | 3            |

|                           |         |         |                         |                      |
|---------------------------|---------|---------|-------------------------|----------------------|
| <b>6.</b>                 | ISL 111 | ISL 112 | Understanding Quran – V | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |         |                         | 15                   |

\*Only for Muslim students

### Semester 7

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                               | Credit Hours         |
|---------------------------|---------------------------|-------------|--------------------------------------------|----------------------|
| <b>1.</b>                 |                           | ENV 410     | Environmental Impact Assessment            | 3                    |
| <b>2.</b>                 | -                         | -           | Elective-II                                | 3                    |
| <b>3.</b>                 |                           | ENV 420     | Research Methods in Environmental Sciences | 3                    |
| <b>4.</b>                 |                           | GEO 420     | Hydrogeology                               | 3                    |
| <b>5.</b>                 |                           | GEO 438     | GIS & Remote Sensing                       | 2                    |
|                           |                           | GEL 438     | GIS & Remote Sensing Lab                   | 1                    |
| <b>6.</b>                 | ISL 112                   | ISL 113     | Seerah -I                                  | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |                           |             |                                            | 15                   |

\*Only for Muslim students

## Semester 8

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                  | Credit Hours   |
|---------------------------|---------------------------|-------------|-------------------------------|----------------|
| 1.                        | -                         | -           | Elective-III                  | 3              |
| 2.                        |                           | ENV 441     | Energy and Environment        | 2              |
|                           |                           | ENL 441     | Energy and Environment Lab    | 1              |
| 3.                        |                           | ENV 430     | Environmental Policies & Laws | 3              |
| 4.                        |                           | ENV 436     | Thesis                        | 3              |
| 5.                        |                           | ENV 425     | Occupational Health & Safety  | 3              |
| 6.                        | ISL 113                   | ISL 114     | Seerah -I                     | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                               | 15             |

\*Only for Muslim students

## List of Elective Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                   | Credit Hours |
|---------|---------------------------|-------------|--------------------------------|--------------|
| 1.      |                           | ENV 355     | Urban Environmental Management | 3            |
| 2.      |                           | GEO 335     | Earthquake Seismology          | 3            |
| 3.      |                           | ENV 352     | Soil and Environment           | 3            |
| 4.      |                           | GEO 436     | Health Safety & Environment    | 3            |
| 5.      |                           | ENV 405     | Pollution Control Technology   | 3            |
| 6.      | ENV 415                   | ENV 461     | Water Resources Management     | 3            |
| 7.      |                           | ENV 465     | Public health and Environment  | 3            |
| 8.      |                           | ENV 466     | Ecotourism Management          | 3            |
| 9.      |                           | ENV 467     | Air & Noise Pollution          | 3            |

## BS – Geo Physics (4 Years)

**Campus:** Islamabad

**Program Duration:** 4 Years (8 Semesters)

**Programme Timing:** Morning

**Entry Requirements:**

F.Sc (Pre-Engg/Pre-Medical/ A level, ICS, Engg. Diploma or equivalent) with 50% marks.

### ROADMAP

#### Semester 1

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                | Credit Hours |
|---------|---------------------------|-------------|---------------------------------------------|--------------|
| 1       |                           | ENG 101     | Functional English                          | 3            |
| 2       |                           | PHY 103     | Physics                                     | 2            |
|         |                           | PHL 103     | Physics Lab                                 | 1            |
| 3       |                           | CSC 102     | Introduction to Computers & Programming     | 2            |
|         |                           | CSL 102     | Introduction to computers & Programming lab | 1            |
| 4       |                           | PAK 103     | Pakistan Studies & Global Perspective       | 2            |
| 5       |                           | GEO 105     | Physical & General Geology                  | 3            |
| 6       |                           | ISL 101     | Islamic Studies                             | 2            |

|                           |  |         |             |                      |
|---------------------------|--|---------|-------------|----------------------|
| <b>7</b>                  |  | MAT105  | Mathematics | 0                    |
| <b>8</b>                  |  | ISL 107 | Tajweed     | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |  |         |             | <b>16</b>            |

## Semester 2

| <b>Sr. No.</b>            | <b>Pre-requisite<br/>Course<br/>Code</b> | <b>Course Code</b> | <b>Course Title</b>                            | <b>Credit<br/>Hours</b> |
|---------------------------|------------------------------------------|--------------------|------------------------------------------------|-------------------------|
| <b>1</b>                  |                                          | HSS 320            | Technical Writing and<br>Presentation Skills   | 3                       |
| <b>2</b>                  |                                          | GSC 340            | Chemistry                                      | 2                       |
|                           |                                          | GSL 340            | Chemistry Lab                                  | 1                       |
| <b>3</b>                  |                                          | GEO115             | Introduction to<br>Geophysics                  | 3                       |
| <b>4</b>                  | GEO 105                                  | GEO 120            | Field Geology                                  | 2                       |
|                           |                                          | GEL 120            | Field Geology Lab                              | 1                       |
| <b>5</b>                  |                                          | GEO 110            | Fundamental of<br>Geography &<br>Geomorphology | 3                       |
| <b>6</b>                  |                                          | MAT 115            | Calculus &<br>Analytical<br>Geometry           | 3                       |
| <b>7</b>                  | ISL 107                                  | ISL 108            | Understanding Quran-I                          | 1<br>Contact<br>Hour    |
| <b>Total Credit Hours</b> |                                          |                    |                                                | <b>18</b>               |

### Semester 3

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                     | Credit Hours   |
|--------------------|---------------------------|-------------|----------------------------------|----------------|
| 1                  |                           | GEO 201     | Museology                        | 2              |
| 2                  |                           | GEO 206     | Civics and Community Engagement  | 2              |
| 3                  |                           | GEO 205     | Structural Geology               | 2              |
|                    |                           | GEL 205     | Structural Geology Lab           | 1              |
| 4                  |                           | GEO 210     | Mineralogy & Crystallography     | 2              |
|                    |                           | GEL 210     | Mineralogy & Crystallography Lab | 1              |
| 5                  |                           | PSY 102     | Introduction to Psychology       | 2              |
| 6                  |                           | GEO 212     | Geostatistics                    | 3              |
|                    | ISL 108                   | ISL 109     | Understanding Quran-II           | 1 Contact Hour |
| Total Credit Hours |                           |             |                                  | 15             |

## Semester 4

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                                | Credit Hours   |
|--------------------|---------------------------|-------------|---------------------------------------------|----------------|
| 1                  |                           | HSS 423     | Entrepreneurship                            | 2              |
| 2                  |                           | GEO 207     | Applications of ICT                         | 2              |
|                    |                           | GEL 207     | Applications of ICT Lab                     | 1              |
| 3                  |                           | GEO 240     | Gravity and Magnetic Exploration Techniques | 3              |
| 4                  |                           | GEO 215     | Sedimentology                               | 3              |
|                    |                           | GEO 230     | Geotectonics                                | 3              |
| 5                  |                           | GEO 335     | Earthquake Seismology                       | 3              |
| 6                  | ISL 109                   | ISL 110     | Understanding Quran-III                     | 1 Contact Hour |
| Total Credit Hours |                           |             |                                             | 17             |

## Semester 5

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                                        | Credit Hours   |
|--------------------|---------------------------|-------------|-----------------------------------------------------|----------------|
| 1                  |                           | GEO 332     | Rock Physics                                        | 3              |
| 2                  |                           | GEO 345     | Petroleum Geology                                   | 3              |
| 3                  |                           | GEO 325     | Stratigraphy of Pakistan                            | 3              |
| 4                  |                           | GEO 327     | Environmental Geophysics                            | 3              |
| 5                  |                           | GEO 364     | Electrical & Radioactive Exploration Techniques     | 2              |
|                    |                           | GEL 364     | Electrical & Radioactive Exploration Techniques Lab | 1              |
| 6                  |                           | GEO 326     | Computing with Matlab                               | 2              |
|                    |                           | GEL 326     | Computing with Matlab Lab                           | 1              |
| 7                  | ISL 110                   | ISL 111     | Understanding Quran-IV                              | 1 Contact Hour |
| Total Credit Hours |                           |             |                                                     | 18             |

## Semester 6

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                                   | Credit Hours      |
|--------------------|---------------------------|-------------|------------------------------------------------|-------------------|
| 1                  |                           | GEO 340     | Wireline Logging                               | 2                 |
|                    |                           | GEL 340     | Wireline Logging lab                           | 1                 |
| 2                  |                           | GEO 325     | Seismic Data Acquisition & Planning            | 3                 |
| 3                  |                           | GEO 327     | Introduction to Machine Learning               | 2                 |
|                    |                           | GEL 327     | Introduction to Machine Learning Lab           | 1                 |
| 4                  |                           | GEL 364     | Geological & Geophysical Field Work and Report | 3                 |
| 5                  |                           | GEO 350     | Geology of Pakistan                            | 3                 |
| 6                  |                           | -           | Elective - I                                   | 3                 |
| 7                  | ISL 111                   | ISL 112     | Understanding Quran-V                          | 1<br>Contact Hour |
| Total Credit Hours |                           |             |                                                | 18                |

## Semester 7

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title            | Credit Hours |
|---------|---------------------------|-------------|-------------------------|--------------|
| 1       |                           | GEO 425     | Research Methodology    | 3            |
| 2       |                           | GEO 470     | Seismic Data Processing | 3            |

|                           |         |         |                          |                      |
|---------------------------|---------|---------|--------------------------|----------------------|
| <b>3</b>                  |         | -       | Elective - II            | 3                    |
| <b>4</b>                  |         | GEO 438 | GIS & Remote Sensing     | 2                    |
|                           |         | GEL 438 | GIS & Remote Sensing Lab | 1                    |
| <b>5</b>                  |         | GEO 445 | Seismic Stratigraphy     | 3                    |
| <b>6</b>                  | ISL 112 | ISL 113 | Seerah-I                 | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |         |                          | <b>15</b>            |

### Semester 8

| <b>Sr. No.</b> | <b>Pre-requisite<br/>Course Code</b> | <b>Course<br/>Code</b> | <b>Course Title</b>             | <b>Credit<br/>Hours</b> |
|----------------|--------------------------------------|------------------------|---------------------------------|-------------------------|
| <b>1</b>       |                                      | GEO 475                | Seismic Data Interpretation     | 2                       |
|                |                                      | GEL 475                | Seismic Data Interpretation Lab | 1                       |
| <b>2</b>       |                                      |                        | Elective - III                  |                         |
| <b>3</b>       |                                      | GEO 480                | Geophysical Softwares           | 2                       |
|                |                                      | GEL 480                | Geophysical Softwares Lab       | 1                       |
| <b>4</b>       |                                      | GEO 481                | Mining Geophysics               | 3                       |
| <b>5</b>       |                                      | GEO 440                | Thesis / Capstone Project       | 3                       |

|                           |         |         |           |                      |
|---------------------------|---------|---------|-----------|----------------------|
| <b>6</b>                  | ISL 113 | ISL 114 | Seerah-II | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |         |           | <b>15</b>            |

### List of Elective Courses

| <b>Sr. No.</b> | <b>Pre-requisite<br/>Course Code</b> | <b>Course<br/>Code</b> | <b>Course Title</b>                    | <b>Credit<br/>Hours</b> |
|----------------|--------------------------------------|------------------------|----------------------------------------|-------------------------|
| <b>1</b>       |                                      | GEO 411                | Reservoir Geophysics                   | 3                       |
| <b>2</b>       |                                      | GEO 413                | Sequence Stratigraphy                  | 3                       |
| <b>3</b>       |                                      | GEO 390                | Borehole Geophysics                    | 3                       |
| <b>4</b>       |                                      | GEO 421                | Ground Water<br>Investigation          | 2+1                     |
| <b>5</b>       |                                      | GEO 479                | Geospatial Techniques                  | 2+1                     |
| <b>6</b>       |                                      | GEO 316                | Ground water<br>Exploration Techniques | 3                       |
| <b>7</b>       |                                      | GEO 305                | Petroleum Engineering                  | 3                       |

## BS Geo Sciences (4 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:**

1. F.Sc. (Pre-Engg/Pre-Medical /A-levels/ICS (Second Division or 45% marks)
2. Associate Engg. Diploma (Polytech) with Equivalent of 45% marks.
3. BU Entry test & Interview

### ROADMAP

#### Semester 1

| Course Code  | Course Title                | Credit hours<br>(T&L) | Total Credit<br>Hrs |
|--------------|-----------------------------|-----------------------|---------------------|
| PAK 101      | Pakistan studies            | 2                     | 2                   |
| ISL 101      | Islamic Studies             | 2                     | 2                   |
| ENG 103      | English I                   | 3                     | 3                   |
| GEO 101      | Introduction to Geosciences | 2+1                   | 3                   |
| MAT 105      | Mathematics (for pre-med.)  | 0                     | 3                   |
| CSC 105      | Introduction to Computers   | 2+1                   | 3                   |
| PHY 101      | Physics                     | 2+1                   | 3                   |
| <b>Total</b> |                             | <b>16</b>             | <b>16</b>           |

## Semester 2

| Course Code  | Course Title                              | Credit hours (T&L) | Total Credit Hrs. |
|--------------|-------------------------------------------|--------------------|-------------------|
| ENG 104      | English II                                | 3                  | 3                 |
| GEO 110      | Fundamentals of Geography & Geomorphology | 3                  | 3                 |
| GEO 115      | Introduction To Geophysics                | 3                  | 3                 |
| GEO 120      | Field Geology                             | 2+1                | 3                 |
| MAT 115      | Calculus & Analytical Geometry            | 3                  | 3                 |
| CHM 105      | Chemistry                                 | 2+1                | 3                 |
| <b>Total</b> |                                           | <b>18</b>          | <b>18</b>         |

## Semester 3

| Course Code                                         | Course Title                                                                                                                                                                   | Credit hours (T&L) | Total Credit Hrs. |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------|
| ENG 232                                             | Oral Communication                                                                                                                                                             | 3                  | 3                 |
| GEO 205                                             | Structural Geology                                                                                                                                                             | 2+1                | 3                 |
| GEO 210                                             | Mineralogy & Crystallography                                                                                                                                                   | 2+1                | 3                 |
| CSC 205                                             | Programming Fundamentals                                                                                                                                                       | 2+1                | 3                 |
| ENV 245                                             | Introduction to Oceanography                                                                                                                                                   | 3                  | 3                 |
| HSS 107<br>HSS 111<br>HSS 115<br>HSS 201<br>HSS 202 | <b>One of The Following:</b><br>Introduction to Psychology<br>Introduction to IR<br>Introduction to Media Studies<br>Introduction to Anthropology<br>Introduction to Sociology | 3                  | 3                 |
| <b>Total</b>                                        |                                                                                                                                                                                | <b>18</b>          | <b>18</b>         |

## Semester 4

| Course Code | Course Title  | Credit hours (T&L) | Total Credit Hrs. |
|-------------|---------------|--------------------|-------------------|
| GEO 215     | Sedimentology | 3                  | 3                 |
| MAT 205     | Statistics    | 2+1                | 3                 |
| GEO 225     | Geochemistry  | 2+1                | 3                 |
| GEO 230     | Geo-tectonics | 3                  | 3                 |

|                                                     |                                                                                                                                                                                |           |           |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| HSS 107<br>HSS 111<br>HSS 115<br>HSS 201<br>HSS 202 | <b>One of The Following:</b><br>Introduction to Psychology<br>Introduction to IR<br>Introduction to Media Studies<br>Introduction to Anthropology<br>Introduction to Sociology | 3         | 3         |
| <b>Total</b>                                        |                                                                                                                                                                                | <b>15</b> | <b>15</b> |

### Field Work – I

|         |                                     |            |          |
|---------|-------------------------------------|------------|----------|
| GEO 280 | Geosciences Field Work and Report-I | <b>0+2</b> | <b>2</b> |
|---------|-------------------------------------|------------|----------|

### YEAR-3 Semester 5

| Course Code  | Course Title                    | Credit hours (T&L) | Total Credit Hrs. |
|--------------|---------------------------------|--------------------|-------------------|
| GEO 305      | Environmental Geology           | 2+1                | 3                 |
| GEO 302      | Geophysical Exploration Methods | 2+1                | 3                 |
| GEO 315      | Igneous & Metamorphic Petrology | 2+1                | 3                 |
| GEO 350      | Geology of Pakistan             | 3                  | 3                 |
| GEO 437      | GIS & Remote Sensing            | 2+1                | 3                 |
| GEO 325      | Stratigraphy of Pakistan        | 3                  | 3                 |
| <b>Total</b> |                                 | <b>18</b>          | <b>18</b>         |

### Semester 6

| Course Code  | Course Title          | Credit hours (T&L) | Total Credit Hrs. |
|--------------|-----------------------|--------------------|-------------------|
| GEO 320      | Marine Geology        | 2+1                | 3                 |
| GEO 335      | Earthquake Seismology | 2+1                | 3                 |
| GEO 410      | Engineering Geology   | 2+1                | 3                 |
| GEO 345      | Petroleum Geology     | 3                  | 3                 |
| GEO 425      | Research Methodology  | 2                  | 2                 |
| <b>Total</b> |                       | <b>14</b>          | <b>14</b>         |

## Field Work – II

|         |                                      |            |          |
|---------|--------------------------------------|------------|----------|
| GEO 380 | Geosciences Field Work and Report II | <b>0+2</b> | <b>2</b> |
|---------|--------------------------------------|------------|----------|

YEAR-4 (Specialization Year)\* \*\*

## Semester 7

| Course Code  | Course Title            | Credit hours (T&L) | Total Credit Hrs. |
|--------------|-------------------------|--------------------|-------------------|
| GEO XXX      | Specialize Course – I   | 2+1                | 3                 |
| GEO XXX      | Specialize Course – II  | 2+1                | 3                 |
| GEO XXX      | Specialize Course – III | 2+1                | 3                 |
| GEO XXX      | Specialize Course – IV  | 2+1                | 3                 |
| GEO XXX      | Specialize Course – V   | 2+1                | 3                 |
| <b>Total</b> |                         | <b>15</b>          | <b>15</b>         |

## Field Work-III

|         |                                       |            |          |
|---------|---------------------------------------|------------|----------|
| GEO 480 | Geosciences Field Work and Report III | <b>0+2</b> | <b>2</b> |
|---------|---------------------------------------|------------|----------|

## Semester VIII

| Course Code        | Course Title                 | Credit hours (T&L) | Total Credit Hrs. |
|--------------------|------------------------------|--------------------|-------------------|
| GEO XXX            | Specialize Course – VI       | 2+1                | 3                 |
| GEO XXX            | Specialize Course – VII      | 2+1                | 3                 |
| ENV 425            | Occupational Health & Safety | 3+0                | 3                 |
| GEO 490            | Thesis                       | 0+6                | 6                 |
| <b>Total</b>       |                              | <b>15</b>          | <b>15</b>         |
| <b>Grand Total</b> |                              | <b>135 CH</b>      |                   |

\* All Courses in the Specialization will be offered during Year-IV (semester VII-VIII) and will be of 400s Level

\*\* The courses under Specialization mentioned as GEO XXX (above) will be picked up from listed courses given below, accordingly.

### SPECIALIZATION COURSES

1. The following 3-Specializations/choices , i.e., Marine Geology; Marine Geophysics; & GIS & Remote Sensing, will be offered to students at Semester-VII, to choose from. The list of courses for each specialization is listed below:

|   | Marine Geology                              | Marine Geophysics                         | GIS & RS                               |
|---|---------------------------------------------|-------------------------------------------|----------------------------------------|
| 1 | GEO 461 – Coastal Geology & Geomorphology   | GEO 461 – Coastal Geology & Geomorphology | GEO 481- GIS Database Management       |
| 2 | GEO 462 – Physical Oceanography & Surveying | GEO 475 – Seismic Data Interpretation     | GEO 482 – Satellite Image Processing   |
| 3 | GEO 463 – Ocean Crust Sedimentation         | GEO 463 – Ocean Crust Sedimentation       | GEO 483 – GIS Data Analysis            |
| 4 | GEO 445- Seismic Stratigraphy               | GEO 445 – Seismic Stratigraphy            | GEO 484 – Cartography & Mapping        |
| 5 | GEO 415 – Economic Geology                  | GEO 441 – Applied Borehole Geophysics     | GEO 485 – GIS Surveying & GPS Tech.    |
| 6 | GEO 420 – Hydrogeology                      | GEO 420 – Hydrogeology                    | GEO 486 – Mapping of Natural Resources |
| 7 | GEO 444 – Applied GIS & RS Techniques       |                                           |                                        |

## BS – Geology (4 Years)

**Campus:** Islamabad

**Program Duration:** 4 Years (8 Semesters)

**Programme Timing:** Morning

**Entry Requirements:**

F.Sc (Pre-Engg/Pre-Medical/ A level, ICS, Engg. Diploma or equivalent) with 50% marks.

## ROADMAP

### Semester 1

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title       | Credit Hours |
|---------|---------------------------|-------------|--------------------|--------------|
| 1.      |                           | ENG 101     | Functional English | 3            |
| 2.      |                           | PHY 103     | Physics            | 2            |
|         |                           | PHL 103     | Physics Lab        | 1            |

|                    |  |         |                                             |                |
|--------------------|--|---------|---------------------------------------------|----------------|
| 3.                 |  | CSC 102 | Introduction to Computers & Programming     | 2              |
|                    |  | CSL 102 | Introduction to Computers & Programming lab | 1              |
| 4.                 |  | PAK 103 | Pakistan Studies & Global Perspective       | 2              |
| 5.                 |  | GEO 105 | Physical & General Geology                  | 3              |
| 6.                 |  | ISL 101 | Islamic Studies                             | 2              |
| 7.                 |  | MAT105  | Mathematics                                 | 2              |
| 8.                 |  | ISL 107 | Tajweed                                     | 1 Contact Hour |
| Total Credit Hours |  |         |                                             | 16             |

\*Only for Muslim students

## Semester 2

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                              | Credit Hours |
|---------|---------------------------|-------------|-------------------------------------------|--------------|
| 1.      |                           | GSC 340     | Chemistry                                 | 2            |
|         |                           | GSL 340     | Chemistry Lab                             | 1            |
| 2.      |                           | HSS 320     | Technical Writing and Presentation Skills | 3            |
| 3.      |                           | GEO 115     | Introduction to Geophysics                | 3            |
| 4.      |                           | GEO 110     | Fundamental of Geography & Geomorphology  | 3            |

|                    |         |         |                                |                |
|--------------------|---------|---------|--------------------------------|----------------|
| 5.                 | GEO 105 | GEO 120 | Field Geology                  | 2              |
|                    |         | GEL 120 | Field Geology Lab              | 1              |
| 6.                 |         | MAT 115 | Calculus & Analytical Geometry | 3              |
| 7.                 | ISL 107 | ISL 108 | Understanding Quran – I        | 1 Contact Hour |
| Total Credit Hours |         |         |                                | 18             |

\*Only for Muslim students

### Semester 3

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                    | Credit Hours   |
|--------------------|---------------------------|-------------|---------------------------------|----------------|
| 1.                 |                           | GEO 201     | Museology                       | 2              |
| 2.                 |                           | GEO 206     | Civics and Community Engagement | 2              |
| 3.                 |                           | GEO 205     | Structural Geology              | 2              |
|                    |                           | GEL 205     | Structural Geology Lab          | 1              |
| 4.                 |                           | GEO 210     | Mineralogy & Crystallography    | 2              |
|                    |                           | GEL 210     | Mineralogy & Crystallograph Lab | 1              |
| 5.                 |                           | PSY 102     | Introduction to Psychology      | 2              |
| 6.                 |                           | GEO 212     | Geostatistics                   | 3              |
| 7.                 | ISL 108                   | ISL 109     | Understanding Quran – II        | 1 Contact Hour |
| Total Credit Hours |                           |             |                                 | 15             |

\*Only for Muslim students

## Semester 4

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title              | Credit Hours   |
|--------------------|---------------------------|-------------|---------------------------|----------------|
| 1.                 |                           | GEO 225     | Geochemistry              | 3              |
| 2.                 |                           | GEO 215     | Sedimentology             | 3              |
| 3.                 |                           | GEO 230     | Geotectonics              | 3              |
| 4.                 |                           | GEO 207     | Applications of ICT       | 2              |
|                    |                           | GEL 207     | Applications of ICT Lab   | 1              |
| 5.                 |                           | GEO 221     | Optical Mineralogy        | 3              |
| 6.                 |                           | HSS 423     | Entrepreneurship          | 2              |
| 7.                 | ISL 109                   | ISL 110     | Understanding Quran – III | 1 Contact Hour |
| Total Credit Hours |                           |             |                           | 17             |

\*Only for Muslim students

## Semester 5

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title             | Credit Hours |
|---------|---------------------------|-------------|--------------------------|--------------|
| 1.      |                           | GEO 325     | Stratigraphy of Pakistan | 3            |
| 2.      |                           | GEO 345     | Petroleum Geology        | 3            |
| 3.      |                           | GEO 305     | Environmental Geology    | 3            |
| 4.      |                           | GEO 310     | Paleontology             | 3            |

|                    |         |         |                                 |                |
|--------------------|---------|---------|---------------------------------|----------------|
| 5.                 |         | GEO 315 | Igneous & Metamorphic Petrology | 3              |
| 6.                 |         | GEO 326 | Computing with Matlab           | 2              |
|                    |         | GEL 326 | Computing with Matlab Lab       | 1              |
| 7.                 | ISL 110 | ISL 111 | Understanding Quran – IV        | 1 Contact Hour |
| Total Credit Hours |         |         |                                 | 18             |

\*Only for Muslim students

### Semester 6

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                            | Credit Hours |
|---------|---------------------------|-------------|-----------------------------------------|--------------|
| 1.      |                           | GEO 340     | Wireline logging                        | 2            |
|         |                           | GEL 340     | Wireline logging Lab                    | 1            |
| 2.      |                           | GEO 330     | Micropaleontology & Biostratigraphy     | 2            |
|         |                           | GEL 330     | Micropaleontology & Biostratigraphy Lab | 1            |
| 3.      |                           | GEO 360     | Geological Field Work and Report        | 3            |
| 4.      |                           | GEO 350     | Geology of Pakistan                     | 3            |
| 5.      |                           |             | Elective-I                              | 3            |
| 6.      |                           | GEO 335     | Neotectonics                            | 3            |

|                    |         |         |                         |                |
|--------------------|---------|---------|-------------------------|----------------|
| 7.                 | ISL 111 | ISL 112 | Understanding Quran – V | 1 Contact Hour |
| Total Credit Hours |         |         |                         | 18             |

\*Only for Muslim students

### Semester 7

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title             | Credit Hours   |
|--------------------|---------------------------|-------------|--------------------------|----------------|
| 1.                 |                           | GEO 425     | Research Methodology     | 3              |
| 2.                 |                           | GEO 410     | Engineering Geology      | 2              |
|                    |                           | GEL 410     | Engineering Geology Lab  | 1              |
| 3.                 |                           | GEO 438     | GIS & Remote Sensing     | 2              |
|                    |                           | GEL 438     | GIS & Remote Sensing Lab | 1              |
| 4.                 |                           | GEO 420     | Hydrogeology             | 3              |
| 5.                 |                           |             | Elective-II              | 3              |
| 6.                 | ISL 112                   | ISL 113     | Seerah -I                | 1 Contact Hour |
| Total Credit Hours |                           |             |                          | 15             |

\*Only for Muslim students

## Semester 8

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title              | Credit Hours   |
|--------------------|---------------------------|-------------|---------------------------|----------------|
| 1.                 |                           | GEO 469     | Industrial Mineralogy     | 3              |
| 2.                 |                           | GEO 475     | Mining Geology            | 3              |
| 3.                 |                           |             | Elective-III              | 3              |
| 4.                 |                           | GEO 440     | Thesis / Capstone Project | 3              |
| 5.                 |                           | GEO 484     | Quaternary Geology        | 3              |
| 6.                 | ISL 113                   | ISL 114     | Seerah -II                | 1 Contact Hour |
| Total Credit Hours |                           |             |                           | 15             |

\*Only for Muslim students

### List of Elective Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title            | Credit Hours |
|---------|---------------------------|-------------|-------------------------|--------------|
| 1.      |                           | GEO 320     | Marine Geology          | 3            |
| 2.      |                           | GEO 406     | Reservoir Geology       | 3            |
| 3.      |                           | GEO 407     | Clastic Sedimentology   | 3            |
| 4.      |                           | GEO 408     | Carbonate Sedimentology | 3            |



|            |  |         |                                          |   |
|------------|--|---------|------------------------------------------|---|
| <b>5.</b>  |  | GEO 409 | Geology and Tectonics of Pakistan        | 3 |
| <b>6.</b>  |  | GEO 415 | Economic Geology                         | 3 |
| <b>7.</b>  |  | GEO 430 | Geochemical Exploration Techniques       | 3 |
| <b>8.</b>  |  | GEO 431 | Introduction to Geotechnical Engineering | 3 |
| <b>9.</b>  |  | GEO 432 | Rock Mechanics                           | 3 |
| <b>10.</b> |  | GEO 433 | Soil Mechanics                           | 3 |

## BACHELOR OF REMOTE SENSING & GIS (BS RS & GIS)

**Name of the Programme:** Bachelor of Remote Sensing & GIS (BS RS & GIS)

**Program Duration:** 4 Years

**Eligibility Criteria:** Minimum 50% marks in Intermediate (HSSC) Examination (Pre-Medical/Pre-Engg./ICS/ General Science/Diploma of Associate Engineering) or equivalent qualification.

**Deficiency:** For Pre-Medical students, the following one deficiency courses of mathematics will be taught during the first year.

- Mathematics MAT 105 (0 Credit Hours)

### ROAD MAP

#### Semester 1

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                | Credit Hours |
|---------|---------------------------|-------------|---------------------------------------------|--------------|
| 1.      |                           | PAK 103     | Pakistan Studies & Global Perspective       | 2            |
| 2.      |                           | ISL 101     | Islamic Studies                             | 2            |
| 3.      |                           | ENG 101     | Functional English                          | 3            |
| 4.      |                           | MAT 105     | Mathematics                                 | 0            |
| 5.      |                           | CSC 102     | Introduction to Computers & Programming     | 2            |
|         |                           | CSL 102     | Introduction to computers & Programming lab | 1            |
| 6.      |                           | PHY 103     | Physics                                     | 2            |
|         |                           | PHL 103     | Physics Lab                                 | 1            |
| 7.      |                           | RGS 103     | Fundamental of GIS                          | 2            |
|         |                           | RGL 103     | Fundamental of GIS Lab                      | 1            |

|                           |      |         |         |                      |
|---------------------------|------|---------|---------|----------------------|
| <b>8.</b>                 | None | ISL 107 | Tajweed | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |      |         |         | 16                   |

\*Only for Muslim students

## Semester 2

| Sr. No.   | Pre-requisite Course Code | Course Code | Course Title                              | Credit Hours         |
|-----------|---------------------------|-------------|-------------------------------------------|----------------------|
| <b>1.</b> |                           | GSC 340     | Chemistry                                 | 2                    |
|           |                           | GSL 340     | Chemistry Lab                             | 1                    |
| <b>2.</b> |                           | HSS 320     | Technical Writing and Presentation Skills | 3                    |
| <b>3.</b> |                           | MAT 115     | Calculus & Analytic Geometry              | 3                    |
| <b>4.</b> |                           | RGS 104     | Physical Geography                        | 2                    |
|           |                           | RGL 104     | Physical Geography Lab                    | 1                    |
| <b>5.</b> |                           | RGS 105     | Fundamental of Earth Sciences             | 2                    |
|           |                           | RGL 105     | Fundamental of Earth Sciences Lab         | 1                    |
| <b>6.</b> | RGS 103                   | RGS 106     | Introduction to Remote Sensing            | 2                    |
|           | RGL 103                   | RGL 106     | Introduction to Remote Sensing Lab        | 1                    |
| <b>7.</b> | ISL 107                   | ISL 108     | Understanding Quran – I                   | 1<br>Contact<br>Hour |

|                           |      |         |         |                      |
|---------------------------|------|---------|---------|----------------------|
| <b>8.</b>                 | None | ISL 107 | Tajweed | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |      |         |         | 16                   |

\*Only for Muslim students

## Semester 2

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                       | <b>Credit Hours</b> |
|----------------|----------------------------------|--------------------|-------------------------------------------|---------------------|
| <b>1.</b>      |                                  | GSC 340            | Chemistry                                 | 2                   |
|                |                                  | GSL 340            | Chemistry Lab                             | 1                   |
| <b>2.</b>      |                                  | HSS 320            | Technical Writing and Presentation Skills | 3                   |
| <b>3.</b>      |                                  | MAT 115            | Calculus & Analytic Geometry              | 3                   |
| <b>4.</b>      |                                  | RGS 104            | Physical Geography                        | 2                   |
|                |                                  | RGL 104            | Physical Geography Lab                    | 1                   |
| <b>5.</b>      |                                  | RGS 105            | Fundamental of Earth Sciences             | 2                   |
|                |                                  | RGL 105            | Fundamental of Earth Sciences Lab         | 1                   |
| <b>6.</b>      | RGS 103                          | RGS 106            | Introduction to Remote Sensing            | 2                   |
|                | RGL 103                          | RGL 106            | Introduction to Remote Sensing Lab        | 1                   |

|                           |         |         |                         |                      |
|---------------------------|---------|---------|-------------------------|----------------------|
| <b>7.</b>                 | ISL 107 | ISL 108 | Understanding Quran – I | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |         |                         | 18                   |

\*Only for Muslim students

### Semester 3

| Sr. No.   | Pre-requisite Course Code | Course Code | Course Title                       | Credit Hours |
|-----------|---------------------------|-------------|------------------------------------|--------------|
| <b>1.</b> |                           | GEO 201     | Museology                          | 2            |
| <b>2.</b> |                           | GEO 206     | Civics and Community Engagement    | 2            |
| <b>3.</b> |                           | HSS 107     | Introduction to Psychology         | 2            |
| <b>4.</b> |                           | RGS 201     | Introduction to Cartography        | 2            |
|           |                           | RGL 201     | Introduction to Cartography Lab    | 1            |
| <b>5.</b> |                           | RGS 202     | GPS & Surveying                    | 2            |
|           |                           | RGL 202     | GPS & Surveying Lab                | 1            |
| <b>6.</b> |                           | RGS 315     | Human Geography                    | 3            |
| <b>7.</b> | RGS 106                   | RGS 204     | Introduction to Photogrammetry     | 2            |
|           | RGL 106                   | RGL 204     | Introduction to Photogrammetry Lab | 1            |

|                           |         |         |                          |                      |
|---------------------------|---------|---------|--------------------------|----------------------|
| <b>8.</b>                 | ISL 108 | ISL 109 | Understanding Quran – II | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |         |         |                          | 18                   |

\*Only for Muslim students

#### Semester 4

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                                                  | Credit Hours         |
|---------------------------|---------------------------|-------------|---------------------------------------------------------------|----------------------|
| <b>1</b>                  |                           | HSS 423     | Entrepreneurship                                              | 2                    |
| <b>2</b>                  |                           | RGS 319     | Multidisciplinary Applications of GIS & RS                    | 2                    |
|                           |                           | RGL 319     | Multidisciplinary Applications of GIS & RS Lab                | 1                    |
| <b>3</b>                  |                           | GEO 207     | Application of Information and Communication Technologies     | 2                    |
|                           |                           | GEL 207     | Application of Information and Communication Technologies Lab | 1                    |
| <b>4</b>                  |                           | GEO 212     | Geostatistics                                                 | 3                    |
| <b>5</b>                  |                           | RGS 206     | Database Management System                                    | 2                    |
|                           |                           | RGS 20L     | Database Management System Lab                                | 1                    |
| <b>6</b>                  |                           | RGS 207     | Active Remote Sensing & Space Law                             | 3                    |
| <b>7</b>                  | ISL 109                   | ISL 110     | Understanding Quran – III                                     | 1<br>Contact<br>Hour |
| <b>Total Credit Hours</b> |                           |             |                                                               | 17                   |

## Semester 5

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                                    | Credit Hours      |
|---------------------------|---------------------------|-------------|-------------------------------------------------|-------------------|
| 1                         | RGS 206                   | RGS 317     | Spatial Decision Support Systems                | 3                 |
| 2                         | RGS 207                   | RGS 316     | Microwave & Hyper Spectral RS                   | 3                 |
|                           |                           | RGL 316     | Microwave & Hyper Spectral RS Lab               |                   |
| 3                         |                           | GEO 321     | Computing with MATLAB                           | 2                 |
|                           |                           | GEL 321     | Computing with MATLAB Lab                       | 1                 |
| 4                         | RGS 106                   | RGS 331     | Digital Image Processing                        | 2                 |
|                           | RGL 106                   | RGL 331     | Digital Image Processing                        | 1                 |
| 5                         | RGS 202                   | RGS 318     | Spatial Data Infrastructure & Visualization     | 2                 |
|                           | RGL 202                   | RGL 318     | Spatial Data Infrastructure & Visualization Lab | 1                 |
| 6                         |                           | RGS 361     | Integrated Geospatial Technologies              | 2                 |
|                           |                           | RGL 361     | Integrated Geospatial Technologies Lab          | 1                 |
| 7                         | ISL 110                   | ISL 111     | Understanding Quran – IV                        | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                                 | <b>18</b>         |

\*Only for Muslim students

## Semester 6

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                       | Credit Hours      |
|---------------------------|---------------------------|-------------|------------------------------------|-------------------|
| 1                         |                           | -           | Elective-I                         | 3                 |
| 2                         |                           | RGS 330     | Web GIS                            | 2                 |
|                           |                           | RGL 330     | Web GIS Lab                        | 1                 |
| 3                         |                           | RGS 350     | Geodesy                            | 2                 |
|                           |                           | RGL 350     | Geodesy Lab                        | 1                 |
| 4                         |                           | RGS 332     | Satellite Navigation System        | 3                 |
| 5                         |                           | RGS 360     | Spatial Data Analysis              | 2                 |
|                           |                           | RGL 360     | Spatial Data Analysis Lab          | 1                 |
| 6                         |                           | RGL 251     | Geospatial Field Work and Report-I | 3                 |
| 7                         | ISL 111                   | ISL 112     | Understanding Quran – V            | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                    | <b>18</b>         |

\*Only for Muslim students

## Semester 7

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                 | Credit Hours   |
|--------------------|---------------------------|-------------|------------------------------|----------------|
| 1                  |                           | -           | Elective-II                  | 3              |
| 2                  |                           | RGS 453     | GIS for Disaster Management  | 3              |
| 3                  |                           | RGS 458     | Geospatial Techniques        | 2              |
|                    |                           | RGL 458     | Geospatial Techniques Lab    | 1              |
| 4                  |                           | EES 424     | Research Methods             | 3              |
| 5                  |                           | ENV 425     | Occupational Health & Safety | 3              |
| 6                  | ISL 112                   | ISL 113     | Seerah -I                    | 1 Contact Hour |
| Total Credit Hours |                           |             |                              | 15             |

\*Only for Muslim students

## Semester 8

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                                   | Credit Hours      |
|---------------------------|---------------------------|-------------|------------------------------------------------|-------------------|
| 1                         |                           | -           | Elective-III                                   | 3                 |
| 2                         |                           | RGS 451     | Computer Aided Drafting/Drawing                | 2                 |
|                           |                           | RGL 451     | Computer Aided Drafting/Drawing Lab            | 1                 |
| 3                         |                           | RGS 471     | Legal and Social Issues in Geospatial Sciences | 3                 |
| 4                         |                           | RGS 490     | Thesis                                         | 3                 |
| 5                         |                           | RGS 456     | GIS Programming & Python                       | 2                 |
|                           |                           | RGL 456     | GIS Programming & Python Lab                   | 1                 |
| 6                         | ISL 113                   | ISL 114     | Seerah -II                                     | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                                | 15                |

\*Only for Muslim students

### List of Elective Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                  | Credit Hours |
|---------|---------------------------|-------------|-------------------------------|--------------|
| 1.      |                           | RGS 320     | Geospatial Project Management | 3            |
| 2.      |                           | RGS 454     | Spatial Data Modelling        | 2            |
|         |                           | RGL 454     | Spatial Data Modelling Lab    | 1            |

|           |  |         |                                     |   |
|-----------|--|---------|-------------------------------------|---|
| <b>3.</b> |  | RGS 455 | Land & Water Information System     | 2 |
|           |  | RGL 455 | Land & Water Information System Lab | 1 |
| <b>4.</b> |  | RGS 452 | Data Structures and Algorithms      | 2 |
|           |  | RGL 452 | Data Structures and Algorithms Lab  | 1 |
| <b>5.</b> |  | CSC 102 | Machine Learning                    | 2 |
|           |  | CSL 102 | Machine Learning Lab                | 1 |
| <b>6.</b> |  | AIC 201 | Artificial Intelligence             | 2 |
|           |  | AIL 201 | Artificial Intelligence Lab         | 1 |



## MS - Environmental Sciences (2 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 2 Years, 4 Semesters

**Program Timing:** Evening

### Entry Requirements

BS/MSc Earth Sciences with 2.0 CGPA or 50% marks

Additionally, applicants must provide HEC verification of all academic certificates / degrees.

## ROADMAP

| Semester           | Credit Hours (Courses)       |
|--------------------|------------------------------|
| 1                  | 12 CH (4 Compulsory courses) |
| 2                  | 12 CH (4 Elective courses)   |
| 3                  | 03 CH (Thesis)               |
| 4                  | 03 CH (Thesis)               |
| Total Credit Hours | 30                           |

### Compulsory Courses

| Course Codes | Course Title                             | Credit Hours |
|--------------|------------------------------------------|--------------|
| ENV 531      | Environmental Analytical Techniques      | 3            |
| ENV 572      | Climate Change Adaptation and Mitigation | 3            |
| ENV 502      | Environmental Management                 | 3            |
| ESC 701      | Research Methodology                     | 3            |

## Elective Courses

| Course Codes | Course Title                                       | Credit Hours |
|--------------|----------------------------------------------------|--------------|
| ENV 530      | Environmental Biotechnology                        | 3            |
| ENV 503      | Energy and Environment                             | 3            |
| ENV 520      | Solid and Hazardous Waste Management               | 3            |
| ENV 513      | Health, Safety and Environment                     | 3            |
| ENV 515      | Environmental Risk Assessment and Management       | 3            |
| GEO 520      | Hydrochemistry and Groundwater Pollution           | 3            |
| ENV 509      | Population Dynamics and the Environment            | 3            |
| ENV 510      | Environmental Auditing                             | 3            |
| ENV 511      | Environmental Economics                            | 3            |
| ENV 537      | Environmental Engineering                          | 3            |
| ENV 514      | Remote Sensing and GIS Applications in Environment | 3            |
| ENV 518      | Watershed Management                               | 3            |
| ENV 519      | Epidemiology                                       | 3            |
| ENV 521      | Marine Pollution                                   | 3            |
| ENV 505      | Environmental Policies and Laws                    | 3            |
| ENV 533      | Advanced Environmental Chemistry                   | 3            |
| GEO 528      | Groundwater Modeling                               | 3            |
| ENV 504      | Environmental Impact Assessment                    | 3            |
| ENV 522      | Disaster Management                                | 3            |
| ENV 507      | Sustainable Development                            | 3            |
| ENV 508      | Environmental Sociology                            | 3            |
| ENV 534      | Advanced Environmental Microbiology                | 3            |
| ENV 535      | Freshwater Ecology                                 | 3            |

|                                                                   |                                           |   |
|-------------------------------------------------------------------|-------------------------------------------|---|
| ENV 536                                                           | Advanced Environmental Geology            | 3 |
| ENV 512                                                           | Project Management                        | 3 |
| ENV 516                                                           | Wildlife, Forestry and Wetland Management | 3 |
| ENV 524                                                           | Air and Noise Pollution                   | 3 |
| ENV 584                                                           | Advances in Plant Ecology                 | 3 |
| Any other relevant course from Geology and Geophysics disciplines |                                           |   |

## MS (Geo-Physics) 2 Years

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Entry Requirements:**

BS/MSc Earth Sciences with 2.0 CGPA or 50% marks Additionally, applicants must provide HEC verification of all academic certificates/degrees.

## ROADMAP

| Semester           | Credit Hours (Courses)       |
|--------------------|------------------------------|
| 1                  | 12 CH (4 Compulsory Courses) |
| 2                  | 12 CH (4 Elective Courses)   |
| 3                  | 03 CH (Thesis)               |
| 4                  | 03 CH (Thesis)               |
| Total Credit Hours | 30                           |

### Compulsory Courses

| Course Code | Course Title                  | Credit Hours |
|-------------|-------------------------------|--------------|
| GEO 503     | Advanced Petroleum Geology    | 3            |
| GEO 548     | Advanced Seismic Stratigraphy | 3            |
| GEO 540     | Advanced Seismic Techniques   | 3            |
| ESC 701     | Research Methodology          | 3            |

## List of Elective Courses

| Course code | Course Title                                     | Credit Hours |
|-------------|--------------------------------------------------|--------------|
| GEO 518     | 3D Seismic Interpretation                        | 3            |
| GEO 517     | Seismic Data Analysis                            | 3            |
| GEO 515     | Exploration Geophysics                           | 3            |
| GEO 544     | Borehole Geophysics                              | 3            |
| GEO 513     | Advanced Seismology                              | 3            |
| GEO 543     | Advanced Earthquake Seismology                   | 3            |
| GEO 507     | Basin Analysis                                   | 3            |
| GEO 534     | Reservoir Geology                                | 3            |
| GEO 545     | Petrophysical Analysis                           | 3            |
| GEO 531     | Advanced Structural Geology                      | 3            |
| GEO 508     | Stratigraphy and Petroleum Prospects of Pakistan | 3            |
| GEO 598     | Drilling Operations and Well Site Geology        | 3            |
| GEO 514     | Mining Geophysics                                | 3            |
| GEO 542     | Geodesy                                          | 3            |
| GEO 549     | Near Surface Geophysics                          | 3            |
| GEO 510     | Development of Groundwater Resources             | 3            |
| GEO 528     | Groundwater Modeling                             | 3            |
| GEO 530     | Advanced Marine Geology                          | 3            |
| ENV 513     | Health Safety and Environment                    | 3            |
| GEO 505     | Advanced Sedimentology                           | 3            |
| GEO 501     | Global Tectonics                                 | 3            |
| GEO 597     | Applications of GIS in Geosciences               | 3            |



|                                                                              |                                                 |   |
|------------------------------------------------------------------------------|-------------------------------------------------|---|
| GEO 601                                                                      | Gravity and Magnetic Exploration Methods        | 3 |
| GEO 602                                                                      | Electrical Exploration Methods                  | 3 |
| GEO 603                                                                      | Engineering Geophysics                          | 3 |
| GEO 502                                                                      | Geophysical Exploration Methods                 | 3 |
| GEO 512                                                                      | Mineral Prospecting and Exploration             | 3 |
| GEO 519                                                                      | Coal Geology                                    | 3 |
| GEO 524                                                                      | Clastic Sedimentology                           | 3 |
| GEO 525                                                                      | Carbonate Sedimentology                         | 3 |
| ENV 572                                                                      | Climate Change Adaption and Mitigation          | 3 |
| ENV 504                                                                      | Environmental Impact Assessment                 | 3 |
| GEO 516                                                                      | Applied Environmental Geophysics                | 3 |
| GEO 604                                                                      | Machine Learning for Geosciences                | 3 |
| GEO 605                                                                      | Applications of Geostatistics in Geosciences    | 3 |
| GEO 606                                                                      | Reservoir Geomechanics                          | 3 |
| GEO 607                                                                      | Unconventional Hydrocarbon Resources            | 3 |
| GEO 608                                                                      | Practical Applications of Geosciences Softwares | 3 |
| THS 701                                                                      | MS Thesis                                       | 6 |
| Any other relevant course from Geology and Environmental Science disciplines |                                                 |   |

## MS Geology (2 Years)

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Entry Requirements:**

BS/MSc Earth Sciences with 2.0 CGPA or 50% marks Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### ROADMAP

| Semester           | Credit Hours (Courses)       |
|--------------------|------------------------------|
| 1                  | 12 CH (4 Compulsory courses) |
| 2                  | 12 CH (4 Elective courses)   |
| 3                  | 03 CH (Thesis)               |
| 4                  | 03 CH (Thesis)               |
| Total Credit Hours | 30                           |

#### Compulsory Courses

| Course Codes | Course Title                        | Credit Hours |
|--------------|-------------------------------------|--------------|
| GEO 503      | Advanced Petroleum Geology          | 3            |
| GEO 501      | Global Tectonics                    | 3            |
| GEO 512      | Mineral Prospecting and Exploration | 3            |
| ESC 701      | Research Methodology                | 3            |

#### Elective Courses

| Course Codes | Course Title                                     | Credit Hours |
|--------------|--------------------------------------------------|--------------|
| GEO 597      | Applications of GIS in Geosciences               | 3            |
| GEO 548      | Advanced Seismic Stratigraphy                    | 3            |
| GEO 505      | Advanced Sedimentology                           | 3            |
| GEO 506      | Hydrocarbon Geochemistry                         | 3            |
| GEO 507      | Basin Analysis                                   | 3            |
| GEO 508      | Stratigraphy and Petroleum Prospects of Pakistan | 3            |



|         |                                           |   |
|---------|-------------------------------------------|---|
| GEO 598 | Drilling Operations and Well Site Geology | 3 |
| GEO 510 | Development of Groundwater Resources      | 3 |
| GEO 531 | Advanced Structural Geology               | 3 |
| GEO 520 | Rock Mechanics                            | 3 |
| GEO 521 | Soil Mechanics                            | 3 |
| GEO 522 | Geochemical Exploration                   | 3 |
| GEO 523 | Isotope Geochemistry                      | 3 |
| GEO 524 | Clastic Sedimentology                     | 3 |
| GEO 525 | Carbonate Sedimentology                   | 3 |
| GEO 526 | Clay Mineralogy                           | 3 |
| GEO 527 | Hydrochemistry & Groundwater Pollution    | 3 |
| GEO 528 | Groundwater Modeling                      | 3 |
| GEO 529 | Industrial Mineralogy                     | 3 |
| GEO 530 | Advanced Marine Geology                   | 3 |
| GEO 534 | Reservoir Geology                         | 3 |
| GEO 535 | Applied Mineralogy                        | 3 |
| GEO 532 | Fundamentals of Gemology                  | 3 |
| GEO 537 | Advanced Engineering Geology              | 3 |
| ENV 537 | Environmental Engineering                 | 3 |
| ENV 513 | Health Safety and Environment             | 3 |
| GEO 536 | Advanced Igneous Petrology                | 3 |
| GEO 538 | Advanced Metamorphic Petrology            | 3 |
| GEO 539 | Ore Geology                               | 3 |
| GEO 546 | Advanced Biostratigraphy                  | 3 |
| GEO 512 | Mineral Prospecting and Exploration       | 3 |

|                                                                  |                                                  |   |
|------------------------------------------------------------------|--------------------------------------------------|---|
| GEO 502                                                          | Geophysical Exploration Methods                  | 3 |
| GEO 519                                                          | Coal Geology                                     | 3 |
| ENV 572                                                          | Climate Change Adaption and Mitigation           | 3 |
| ENV 522                                                          | Disaster Management                              | 3 |
| ENV 504                                                          | Environmental Impact Assessment                  | 3 |
| GEO 516                                                          | Applied Environmental Geophysics                 | 3 |
| GEO 603                                                          | Engineering Geophysics                           | 3 |
| GEO 604                                                          | Machine Learning for Geosciences                 | 3 |
| GEO 605                                                          | Applications of Geostatistics in Geosciences     | 3 |
| GEO 606                                                          | Reservoir Geomechanics                           | 3 |
| GEO 607                                                          | Unconventional Hydrocarbon Resources             | 3 |
| GEO 608                                                          | Practical Applications of Geosciences Software's | 3 |
| THS 701                                                          | MS Thesis                                        | 6 |
| Any other relevant course from Geophysics/Environmental Sciences |                                                  |   |



## PhD Environmental Sciences

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

The application form duly filled and supported with relevant documents including attested copies of degrees/certificates should be submitted to the university admission office.

Applicants should have MS (a minimum education of 18 or 17.5 years) in environmental sciences or any other related field.

A minimum CGPA of 3.0 in the semester s ystem or 60% marks in the annual system is mandatory. Certificate of GAT subject or Departmental Test with minimum score of 70%.

The research proposal (5 to 6 pages) is the key component for the admission which should refer to a specific area (or areas) of the research interest.

Additionally, applicants must provide HEC verification of all academic certificates / degrees.

## ROADMAP

### Semester 1

| Sr. No. | Course Code | Course Title                            | Credit Hours |
|---------|-------------|-----------------------------------------|--------------|
| 1       | ENV 801     | Recent Trends in Environmental Sciences | 3            |
| 2       | ENV 802     | Advanced Ecosystem Management           | 3            |
| 3       | -           | Elective course                         | 3            |

## Semester 2

| Sr. No. | Course Code | Course Title                         | Credit Hours |
|---------|-------------|--------------------------------------|--------------|
| 1       | ENV 803     | Environmental Health Risk Assessment | 3            |
| 3       | -           | Elective course                      | 3            |
| 3       | -           | Elective course                      | 3            |

## Semester 3

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

## Semester 4

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

## Semester 5

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

## Semester 5

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |



### List of Electives Courses

| Sr. No. | Course Code | Course Title                                       | Credit Hours |
|---------|-------------|----------------------------------------------------|--------------|
| 1       | ENV 804     | Independent Research Study                         | 3            |
| 2       | ENV 805     | Air Pollution & Control                            | 3            |
| 3       | ENV 806     | Environmental Seminar                              | 3            |
| 4       | ENV 807     | Field Trips to Industries                          | 3            |
| 5       | ENV 808     | Environmental Monitoring, Sampling and Analysis    | 3            |
| 6       | ENV 809     | Environmental Data Analysis                        | 3            |
| 7       | ENV 810     | Critical Review of Literature                      | 3            |
| 8       | ENV 811     | Environmental Pollution and Climate Change         | 3            |
| 9       | ENV 812     | Advanced Environmental Legislation and Regulations | 3            |
| 10      | ENV 813     | Hazardous Solid Waste Management                   | 3            |
| 11      | ENV 814     | Natural Resources & Associated Problems            | 3            |
| 12      | ENV 815     | Environmental Social Issues                        | 3            |
| 13      | ENV 816     | Alternative Energy Sources                         | 3            |
| 14      | ENV 817     | Advanced Research Methodology                      | 3            |

### List of Deficiency Courses

Deficiency courses can be selected from 700-level courses of MS Environmental Sciences Roadmap, as recommended by the Admission Committee.

## PhD Geo-Physics (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

18 years of education. MS/MPhil degree in Geophysics

HEC recognized MS/MPhil degree in Geophysics with 3.00/400 CGPA (Semester System) or 60% marks (Annual System) with Subject GAT/University Test Prior to admission.

Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### Semester-wise Road map of PhD Geophysics

#### Semester – 1

| Sr. No. | Course Code | Course Title                       | Credit Hours |
|---------|-------------|------------------------------------|--------------|
| 1       | GEO 814     | Hydrocarbon Exploration Techniques | 3            |
| 2       | GEO 828     | Contemporary Trends in Geosciences | 3            |
| 3       | GEO 8xx     | Elective course I                  | 3            |

#### Semester – 2

| Sr. No. | Course Code | Course Title               | Credit Hours |
|---------|-------------|----------------------------|--------------|
| 1       | GEO 803     | Seismic Imaging Techniques | 3            |
| 2       | GEO 8xx     | Elective course II         | 3            |
| 3       | GEO 8xx     | Elective course III        | 3            |

### Semester – 3

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### Semester – 4

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### Semester – 5

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### Semester – 6

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### List of Electives Courses

| Sr. No. | Course Code | Course Title                                         | Credit Hours |
|---------|-------------|------------------------------------------------------|--------------|
| 1       | ESC 801     | Advanced Research Methodology                        | 3            |
| 2       | GEO 801     | Tectonic Evolution of Pakistan                       | 3            |
| 3       | GEO 804     | 3D Seismic Attributes for Reservoir Characterization | 3            |
| 4       | GEO 805     | 3D Seismic Acquisition in Offshore & Onshore         | 3            |
| 5       | GEO 806     | Reservoir Modeling                                   | 3            |
| 6       | GEO 807     | GIS applications in Geophysics                       | 3            |



|           |         |                                 |   |
|-----------|---------|---------------------------------|---|
| <b>7</b>  | GEO 808 | Signal Processing in Geophysics | 3 |
| <b>8</b>  | GEO 809 | Geosciences Software            | 3 |
| <b>9</b>  | GEO 810 | Petrophysics                    | 3 |
| <b>10</b> | GEO 811 | Advanced Reflection Seismology  | 3 |
| <b>11</b> | GEO 812 | Mining Geophysics               | 3 |
| <b>12</b> | GEO 813 | Gravity & Magnetic Modeling     | 3 |
| <b>13</b> | GEO 826 | Disaster Risk Management        | 3 |
| <b>14</b> | GEO 829 | Advanced Earthquake Seismology  | 3 |
| <b>15</b> | GEO 850 | Advanced Basin Analysis         | 3 |
| <b>16</b> | GEO 851 | Reservoir Characterization      | 3 |
| <b>17</b> | GEO 853 | Advanced Sequence Stratigraphy  | 3 |
| <b>18</b> | GEO 868 | Advanced Structural Geology     | 3 |
| <b>19</b> | GEO 869 | Geostatistics                   | 3 |
| <b>20</b> | GEO 871 | Advanced Petroleum Geology      | 3 |
| <b>21</b> | GEO 872 | Advanced Electrical Methods     | 3 |

### **List of Deficiency Courses**

Course will be selected from MS Geophysics with 700 code, as per recommendation of Admission Committee.

## PhD - Geology (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

18 years of education in the relevant field 3.00/400 CGPA in MS program with Subject GAT/University Test Prior to admission or 60% marks (Annual System) Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### ROADMAP

#### Semester – 1

| Sr. No. | Course Code | Course Title                   | Credit Hours |
|---------|-------------|--------------------------------|--------------|
| 1       | GEO801      | Tectonic Evolution of Pakistan | 3            |
| 2       | GEO802      | Geosciences Seminar            | 3            |
| 3       | GEO 8XX     | Elective course-I              | 3            |

#### Semester – 2

| Sr. No. | Course Code | Course Title               | Credit Hours |
|---------|-------------|----------------------------|--------------|
| 1       | GEO 871     | Advanced Petroleum Geology | 3            |
| 2       | GEO xx      | Elective course- II        | 3            |
| 3       | GEO 8xx     | Elective course-III        | 3            |

### Semester – 3

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### Semester – 4

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### Semester – 5

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### Semester – 6

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 3            |

### List of Electives Courses

| Sr. No. | Course Code | Course Title                    | Credit Hours |
|---------|-------------|---------------------------------|--------------|
| 1       | GEO 831     | Igneous Petro genesis           | 3            |
| 2       | GEO832      | Stable Isotope Geo science      | 3            |
| 3       | GEO833      | Ore Mineralogy                  | 3            |
| 4       | GEO834      | Geo chemical Prospecting        | 3            |
| 5       | GEO835      | Radiogenic Isotopes Geo science | 3            |
| 6       | GEO836      | Ore Petrology                   | 3            |
| 7       | GEO837      | Applied Mineralogy              | 3            |



|           |        |                                     |   |
|-----------|--------|-------------------------------------|---|
| <b>8</b>  | GEO838 | Fluid Inclusions                    | 3 |
| <b>9</b>  | GEO839 | Gemology                            | 3 |
| <b>10</b> | GEO840 | Metamorphic Petro genesis           | 3 |
| <b>11</b> | GEO841 | Advanced Geochemistry               | 3 |
| <b>12</b> | GEO842 | Advanced Mineralogy                 | 3 |
| <b>13</b> | GEO843 | Mineral Prospecting and Exploration | 3 |
| <b>14</b> | GEO844 | Mineral Deposit Evaluation          | 3 |
| <b>15</b> | GEO845 | Carbonate Sedimentlogy              | 3 |
| <b>16</b> | GEO846 | Clastic Sedimentology               | 3 |
| <b>17</b> | GEO847 | Petroleum Geochemistry              | 3 |
| <b>18</b> | GEO848 | Advanced Marine Geology             | 3 |
| <b>19</b> | GEO814 | Hydrocarbon Exploration Techniques  | 3 |
| <b>20</b> | GEO850 | Advanced Basin Analysis             | 3 |
| <b>21</b> | GEO851 | Reservoir Characterization          | 3 |
| <b>22</b> | GEO852 | Advanced Micropaleontology          | 3 |
| <b>23</b> | GEO853 | Advanced Sequence Stratigraphy      | 3 |
| <b>24</b> | GEO854 | Watershed Management                | 3 |
| <b>25</b> | GEO855 | Contaminant Hydrogeology            | 3 |
| <b>26</b> | GEO856 | Advanced Rock Mechanics             | 3 |
| <b>27</b> | GEO857 | Advanced Soil Mechanics             | 3 |
| <b>28</b> | GEO858 | Advanced Quantitative Hydrogeology  | 3 |



|           |        |                                            |   |
|-----------|--------|--------------------------------------------|---|
| <b>29</b> | GEO859 | Advanced Engineering Geology               | 3 |
| <b>30</b> | GEO860 | Ground Water Modeling (Flow and Transport) | 3 |
| <b>31</b> | GEO861 | Advanced Hydro geochemistry                | 3 |
| <b>32</b> | GEO862 | Desertification                            | 3 |
| <b>33</b> | GEO863 | Geotechnical Engineering                   | 3 |
| <b>34</b> | GEO866 | Advanced Instrumentation                   | 3 |
| <b>35</b> | GEO867 | Glaciology                                 | 3 |
| <b>36</b> | GEO868 | Advanced Structural Geology                | 3 |
| <b>37</b> | GEO829 | Advanced Earth quake Seismology            | 3 |
| <b>38</b> | GEO869 | Geo statistics                             | 3 |
| <b>39</b> | GEO826 | Disaster Risk Management                   | 3 |
| <b>40</b> | GEO870 | Advanced Geo informatics                   | 3 |
| <b>41</b> | GEO810 | Petrophysics                               | 3 |

### **List of Deficiency Courses**

Deficiency courses can be selected from 700-level courses of MS Geology Roadmap, as recommended by the Admission Committee.



## DEPARTMENT OF COMPUTER SCIENCE

### Programs offered:

- BS (Artificial Intelligence)
- BS (Computer Sciences)
- BS (Information Technology)
- BS Business & IT
- ADP (Computer Sciences)
- MS (Computer Sciences)
- MS (Data Sciences)
- MS (Information Security)
- MS (Mathematics)
- MS (Telecom & Networking)
- PhD (Computer Sciences)
- PhD (Mathematics)

### BS - Artificial Intelligence (4 Years)

**Campus:** Islamabad & Karachi

**Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:** Minimum 50% marks in Intermediate (HSSC) Examination (Pre-Medical/Pre-Engg.) or equivalent qualification with Mathematics certified by IBCC.

#### Program Education Objectives:

1. Utilize knowledge to solve real-world problems by applying theory, principles, and methods of computing in general and artificial intelligence in particular.
2. Demonstrate social and ethical responsibility in professional life.
3. Manifest lifelong learning for sustained professional and personal progression.
4. Practice effective communication and teamwork skills.

**Outcomes of the Programme:** Graduates capable of fulfilling developmental and research needs in the domain of AI.

## ROADMAP

### SEMESTER 1

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                                               | Credit Hours      |
|---------------------------|---------------------------|-------------|------------------------------------------------------------|-------------------|
| 1.                        | None                      | GSC 114     | Applied Physics                                            | 2                 |
| 2.                        | None                      | GSL 113     | Applied Physics Lab                                        | 1                 |
| 3.                        | None                      | CSC 114     | Introduction to Information & Communication Technology     | 2                 |
| 4.                        | None                      | CSL 114     | Introduction to Information & Communication Technology Lab | 1                 |
| 5.                        | None                      | CSC 113     | Computer Programming                                       | 3                 |
| 6.                        | None                      | CSL 113     | Computer Programming Lab                                   | 1                 |
| 7.                        | None                      | GSC 221     | Discrete Mathematics                                       | 3                 |
| 8.                        | None                      | ISL 101     | Islamic Studies                                            | 2                 |
| 9.                        | None                      | CSC 308     | Professional Practices and Ethics                          | 2                 |
| 10                        | None                      | ISL 107     | Tajweed                                                    | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                                            | <b>17</b>         |

\*Only for Muslim students

### SEMESTER 2

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                    | Credit Hours |
|---------|---------------------------|-------------|---------------------------------|--------------|
| 1.      | None                      | CEN 122     | Digital Design                  | 2            |
| 2.      | None                      | CEL 122     | Digital Design Lab              | 1            |
| 3.      | CSC 113                   | CSC 210     | Object Oriented Programming     | 3            |
| 4.      | CSC 113                   | CSL 210     | Object Oriented Programming Lab | 1            |

## SEMESTER 1

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                                               | Credit Hours      |
|--------------------|---------------------------|-------------|------------------------------------------------------------|-------------------|
| 1.                 | None                      | GSC 114     | Applied Physics                                            | 2                 |
| 2.                 | None                      | GSL 113     | Applied Physics Lab                                        | 1                 |
| 3.                 | None                      | CSC 114     | Introduction to Information & Communication Technology     | 2                 |
| 4.                 | None                      | CSL 114     | Introduction to Information & Communication Technology Lab | 1                 |
| 5.                 | None                      | CSC 113     | Computer Programming                                       | 3                 |
| 6.                 | None                      | CSL 113     | Computer Programming Lab                                   | 1                 |
| 7.                 | None                      | GSC 221     | Discrete Mathematics                                       | 3                 |
| 8.                 | None                      | ISL 101     | Islamic Studies                                            | 2                 |
| 9.                 | None                      | CSC 308     | Professional Practices and Ethics                          | 2                 |
| 10                 | None                      | ISL 107     | Tajweed                                                    | 1<br>Contact Hour |
| Total Credit Hours |                           |             |                                                            | 17                |

\*Only for Muslim students

## SEMESTER 2

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                    | Credit Hours |
|---------|---------------------------|-------------|---------------------------------|--------------|
| 1.      | None                      | CEN 122     | Digital Design                  | 2            |
| 2.      | None                      | CEL 122     | Digital Design Lab              | 1            |
| 3.      | CSC 113                   | CSC 210     | Object Oriented Programming     | 3            |
| 4.      | CSC 113                   | CSL 210     | Object Oriented Programming Lab | 1            |
| 5.      | None                      | GSC 122     | Probability and Statistics      | 3            |

|                           |         |         |                                          |                   |
|---------------------------|---------|---------|------------------------------------------|-------------------|
| <b>6.</b>                 | None    | GSC 110 | Applied Calculus and Analytical Geometry | 3                 |
| <b>7.</b>                 | None    | ENG 101 | Functional English                       | 3                 |
| <b>8.</b>                 | None    | PAK 103 | Pakistan Studies & Global Perspective    | 2                 |
| <b>9.</b>                 | ISL 107 | ISL 108 | Understanding Quran-I                    | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                          | 18                |

\*Only for Muslim students

### SEMESTER 3

| <b>Sr. No.</b>            | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                          | <b>Credit Hours</b> |
|---------------------------|----------------------------------|--------------------|----------------------------------------------|---------------------|
| <b>1.</b>                 | CEN 120                          | CEN 323            | Computer Organization& Assembly Language     | 2                   |
| <b>2.</b>                 | CEN 120                          | CEL 323            | Computer Organization& Assembly Language Lab | 1                   |
| <b>3.</b>                 | CSC 113                          | CSC 221            | Data Structures and Algorithms               | 3                   |
| <b>4.</b>                 | CSC 113                          | CSL 221            | Data Structures and Algorithms Lab           | 1                   |
| <b>5.</b>                 | AIC 201                          | AIC 202            | Programming for Artificial Intelligence      | 2                   |
| <b>6.</b>                 | AIC 201                          | AIL 202            | Programming for Artificial Intelligence Lab  | 1                   |
| <b>7.</b>                 | None                             | GSC 121            | Linear Algebra                               | 3                   |
| <b>8.</b>                 | None                             | ENG134             | Communication Skills                         | 2                   |
| <b>9.</b>                 | None                             | HSS 219            | Civic and Community Engagement               | 2                   |
| <b>10.</b>                | ISL 108                          | ISL 109            | Understanding Quran-II                       | 1<br>Contact Hour   |
| <b>Total Credit Hours</b> |                                  |                    |                                              | 17                  |

\*Only for Muslim students

## SEMESTER 4

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                          | Credit Hours      |
|--------------------|---------------------------|-------------|---------------------------------------|-------------------|
| 1.                 | None                      | CEN 222     | Data Communication and Networking     | 3                 |
| 2.                 | None                      | CEL 222     | Data Communication and Networking Lab | 1                 |
| 3.                 | CSC 210                   | AIC 201     | Artificial Intelligence               | 3                 |
| 4.                 | CSC 210                   | AIL 201     | Artificial Intelligence Lab           | 1                 |
| 5.                 | None                      | CSC 220     | Database Management Systems           | 3                 |
| 6.                 | None                      | CSL 220     | Database Management Systems Lab       | 1                 |
| 7.                 | None                      | HSS 423     | Entrepreneurship                      | 2                 |
| 8.                 |                           |             | Social Sciences Elective              | 3                 |
| 9.                 | ISL 109                   | ISL 110     | Understanding Quran-III               | 1<br>Contact Hour |
| Total Credit Hours |                           |             |                                       | 17                |

\*Only for Muslim students

## SEMESTER 5

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                         | Credit Hours |
|---------|---------------------------|-------------|--------------------------------------|--------------|
| 1.      | AIC 201                   | AIC 203     | Knowledge Representation & Reasoning | 3            |
| 2.      | AIC 201                   | AIC 301     | Machine Learning                     | 2            |
| 3.      | AIC 201                   | AIL 301     | Machine Learning Lab                 | 1            |
| 4.      | GSC 110                   | GSC 211     | Multivariable Calculus               | 3            |
| 5.      | CSC 221                   | CSC 321     | Design and Analysis of Algorithms    | 3            |

|                           |         |         |                        |                   |
|---------------------------|---------|---------|------------------------|-------------------|
| <b>6.</b>                 |         |         | Domain Elective 1      | (2+1)             |
| <b>7.</b>                 |         |         | Domain Elective 2      | (3+0 or 2+1)      |
| <b>8.</b>                 | ISL 110 | ISL 111 | Understanding Quran-IV | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |         |         |                        | <b>18</b>         |

\*Only for Muslim students

## SEMESTER 6

| <b>Sr. No.</b>            | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                  | <b>Credit Hours</b> |
|---------------------------|----------------------------------|--------------------|--------------------------------------|---------------------|
| <b>1.</b>                 | AIC 301                          | AIC 401            | Deep Learning                        | 2                   |
| <b>2.</b>                 | AIC 301                          | AIL 401            | Deep Learning Lab                    | 1                   |
| <b>3.</b>                 | CSC 221                          | CSC 320            | Operating Systems                    | 3                   |
| <b>4.</b>                 | CSC 221                          | CSL 320            | Operating Systems Lab                | 1                   |
| <b>5.</b>                 | CSC 320                          | AIC 302            | Parallel & Distributed Computing     | 2                   |
| <b>6.</b>                 | CSC 320                          | AIL 302            | Parallel & Distributed Computing Lab | 1                   |
| <b>7.</b>                 |                                  |                    | Domain Elective 3                    | (2+1)               |
| <b>8.</b>                 |                                  |                    | Elective 4                           | (3+0 or 2+1)        |
| <b>9.</b>                 | ISL 111                          | ISL 112            | Understanding Quran-V                | 1<br>Contact Hour   |
| <b>Total Credit Hours</b> |                                  |                    |                                      | <b>16</b>           |

\*Only for Muslim students

## SEMESTER 7

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title         | Credit Hours      |
|---------------------------|---------------------------|-------------|----------------------|-------------------|
| 1.                        | None                      | FYP 400     | Final Year Project   | 3                 |
| 2.                        | None                      | SEN 220     | Software Engineering | 3                 |
| 3.                        | None                      | AIC 304     | Computer Vision      | 2                 |
| 4.                        | None                      | AIL 304     | Computer Vision Lab  | 1                 |
| 5.                        | HSS 120                   | ENG 123     | Expository Writing   | 3                 |
| 6.                        |                           |             | Elective 5           | (2+1)             |
| 7.                        | ISL 112                   | ISL 113     | Seerah-I             | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                      | 15                |

\*Only for Muslim students

## SEMESTER 8

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title         | Credit Hours      |
|---------------------------|---------------------------|-------------|----------------------|-------------------|
| 1.                        | None                      | FYP 400     | Final Year Project   | 3                 |
| 2.                        | CEN 222                   | CSC 407     | Information Security | 3                 |
| 3.                        |                           |             | Elective Supporting  | 3                 |
| 4.                        |                           |             | Domain Elective 6    | (2+1)             |
| 5.                        |                           |             | Domain Elective 7    | (3+0 or 2+1)      |
| 6.                        | ISL 113                   | ISL 114     | Seerah-II            | 1<br>Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                      | 15                |

\*Only for Muslim students

## List of Elective Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                   | Credit Hours |
|---------|---------------------------|-------------|--------------------------------|--------------|
| 1.      | GSC 122                   | AIC 305     | Advance Statistics             | 3            |
| 2.      | None                      | CSC 315     | Theory of Automata             | 3            |
| 3.      | None                      | CSC 452     | Data Mining                    | 3            |
| 4.      | None                      | AIC 306     | Speech Processing              | 3            |
| 5.      | None                      | AIC 402     | Reinforcement Learning         | 3            |
| 6.      | None                      | AIC 403     | Fuzzy Systems                  | 2            |
| 7.      | None                      | AIC 307     | Evolutionary Computing         | 3            |
| 8.      | None                      | AIC 308     | Agent-Based Modeling           | 3            |
| 9.      | None                      | CEN 459     | Robotics                       | 2+1          |
| 10.     | None                      | ITC 412     | Introduction to Cyber Security | 2+1          |
| 11.     | None                      | AIC 442     | Natural Language Processing    | 2+1          |
| 12.     | None                      | AIC 410     | Virtual and Augmented Reality  | 2+1          |
| 13.     | None                      | AIC 411     | HCI & Computer Graphics        | 2+1          |
| 14.     | None                      | AIC 310     | Swarm Intelligence             | 2+1          |
| 15.     | None                      | CSC 400     | Quantum Computing              | 2+1          |
| 16.     | None                      | AIC 377     | Game Artificial Intelligence   | 2+1          |



### List of Social Sciences Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                  | Credit Hours |
|---------|---------------------------|-------------|-------------------------------|--------------|
| 1.      | None                      | HSS 107     | Introduction to Psychology    | 3            |
| 2.      | None                      | HSS 115     | Introduction to Media studies | 3            |
| 3.      | None                      | BES 103     | Critical Thinking             | 3            |

### List of Elective Supporting Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                       | Credit Hours |
|---------|---------------------------|-------------|------------------------------------|--------------|
| 1.      | None                      | MKT 110     | Principles of Marketing            | 3            |
| 2.      | None                      | FIN 201     | Fundamentals of Finance            | 3            |
| 3.      | None                      | MGT 111     | Principles of Management           | 3            |
| 4.      | None                      | MGT 242     | Organizational Theory and Behavior | 3            |

## BACHELOR OF BUSINESS & IT

### Eligibility Criteria:

- Minimum 45% marks in HSSC/ FSC / ICS / ICOM/ 12 years schooling/ A-Level or Equivalent are required for admission in Associate Degree in Business Administration
- Equivalency certificate by IBCC will be required in case of education from some other country or system

**Program Duration:** 4 Years (8 Semesters)

**Campus:** BULC

### ROAD MAP OF BS BUSINESS & IT

#### SEMESTER 1

| S.# | Course Code | Course Title                           | Credit Hours |
|-----|-------------|----------------------------------------|--------------|
| 1.  | ENG 101     | Functional English                     | 3            |
| 2.  | MKT 110     | Principle of Marketing                 | 3            |
| 3.  | MGT 111     | Principles of Management               | 3            |
| 4.  | QTM 122     | Business Mathematics & Numeracy Skills | 3            |
| 5.  | MIS 161     | IT in Business (word, excel)           | 3            |
| 6.  | ECO 101     | Fundamentals of Economics              | 3            |
| 7.  | ISL 107     | Tajveed                                | 3            |

#### SEMESTER 2

| S.# | Course Code | Course Title                                   | Credit Hours |
|-----|-------------|------------------------------------------------|--------------|
| 1.  | ENG 102     | English Writing Skills                         | 3            |
| 2.  | HSS 403     | Pakistan and Geo-politics Studies              | 3            |
| 3.  | CSC 113     | Computer Programming                           | 3            |
| 4.  | CSL 113     | Computer Programming Lab                       | 1            |
| 5.  | ENV 120     | Introduction to Environment and Sustainability | 3            |
| 6.  | QTM 110     | Business Statistics                            | 3            |

|    |         |                          |   |
|----|---------|--------------------------|---|
| 7. | ACC 101 | Principles of Accounting | 3 |
| 8. | ISL 108 | Understanding Quran-I    | 0 |

### SEMESTER 3

| S.# | Course Code       | Course Title                                    | Credit Hours |
|-----|-------------------|-------------------------------------------------|--------------|
| 1.  | ENG 213           | Oral Communication and Presentation Skills      | 3            |
| 2.  | QTM 205           | Statistical Inference and Quantitative Research | 3            |
| 3.  | CSC 210           | Object Oriented Programming                     | 3            |
| 4.  | CSL 210           | Object Oriented Programming Lab                 | 1            |
| 5.  | SOC 212           | Critical and Logical Thinking                   | 3            |
| 6.  | HSS 202           | Introduction to Sociology                       | 3            |
| 7.  | ISL 201 / SOC 360 | Islamic Socio-Economic Studies / Ethics         | 2            |
| 8.  | ISL 109           | Understanding Quran-II                          | 0            |

### SEMESTER 4

| S.# | Course Code | Course Title                          | Credit Hours |
|-----|-------------|---------------------------------------|--------------|
| 1.  | HSS 219     | Civic and Community Engagement        | 2            |
| 2.  | CEN 223     | Computer Communication & Networks     | 3            |
| 3.  | CEL 223     | Computer Communication & Networks Lab | 1            |
| 4.  | CSC 220     | Database Management System            | 3            |
| 5.  | CSL 220     | Database Management System Lab        | 1            |
| 6.  | MGT 363     | Entrepreneurship                      | 3            |
| 7.  | FIN 201     | Fundamentals of Finance               | 3            |

|    |            |                                    |   |
|----|------------|------------------------------------|---|
| 8. | HRM<br>242 | Organizational Theory and Behavior | 3 |
| 9. | ISL 110    | Understanding Quran-III            | 0 |

### SEMESTER 5

| S.# | Course Code | Course Title                         | Credit Hours |
|-----|-------------|--------------------------------------|--------------|
| 1.  | ENG<br>214  | Business Communication               | 3            |
| 2.  | CSC 221     | Data Structure & Algorithm           | 3            |
| 3.  | CSL 221     | Data Structure & Algorithm Lab       | 1            |
| 4.  | MGT<br>253  | Human Resource Management            | 3            |
| 5.  | HSS 301     | Social and Psychological Development | 3            |
| 6.  | MGT<br>435  | Project Management                   | 3            |
| 7.  | ISL 111     | Understanding Quran-IV               | 0            |

### SEMESTER 6

| S.# | Course Code | Course Title                  | Credit Hours |
|-----|-------------|-------------------------------|--------------|
| 1.  | SEN<br>220  | Software Engineering          | 3            |
| 2.  | RMT<br>240  | Research Methods & Techniques | 3            |
| 3.  | CSC 411     | Artificial Intelligence       | 2            |
| 4.  | CSL 411     | Artificial Intelligence Lab   | 1            |
| 5.  | MGT<br>301  | Business Law                  | 3            |
| 6.  | SOC<br>350  | Business Ethics               | 3            |

|    |         |                                            |   |
|----|---------|--------------------------------------------|---|
| 7. | SCM 361 | Introduction to Blue Economy and Green SCM | 3 |
| 8. | ISL 112 | Understanding Quran-V                      | 0 |

### SEMESTER 7

| S.# | Course Code | Course Title                          | Credit Hours |
|-----|-------------|---------------------------------------|--------------|
| 1.  | MKT 689     | Digital Marketing                     | 3            |
| 2.  | MIS 460     | E-Commerce                            | 3            |
| 3.  | MIS 461     | Advance Application of IT in Business | 3            |
| 4.  | CSC 487     | Introduction to Data Science          | 2            |
| 5.  | CSL 487     | Introduction to Data Science Lab      | 1            |
| 6.  |             | Specialization-I                      | 3            |
| 7.  |             | Specialization-II                     | 3            |
| 8.  | ISL 113     | Seerah-I                              | 0            |

### SEMESTER 8

| S.# | Course Code | Course Title                       | Credit Hours |
|-----|-------------|------------------------------------|--------------|
| 1.  | CSC 341     | Mobile Application Development     | 2            |
| 2.  | CSL 341     | Mobile Application Development Lab | 1            |
| 3.  |             | Specialization-III                 | 3            |
| 4.  |             | Specialization-IV                  | 3            |
| 5.  |             | Capstone Project                   | 3            |
| 6.  |             | Seerah-II                          | 0            |

## BS - Computer Science (4 Years)

**Campus:** Islamabad, Karachi & Lahore

**Regular Programme Duration:** 4 Years (8 Semesters)

**Programme Timing:** Morning

**Eligibility Criteria:**

Minimum 50% marks in Intermediate (HSSC) Examination (Pre-Medical/ Pre-Engg.) or equivalent qualification with Mathematics certified by IBCC.

Pre-Medical students must pass deficiency courses of Mathematics of 6 credit hours within one year

**Program Education Objectives:**

1. Apply computing knowledge and skills to design and develop effective solutions for complex real-life problems.
2. Demonstrate ethical and moral conduct in professional practices.
3. Manifest life-long learning and interpersonal skills for sustainable career development and professional growth.

### Semester-wise Roadmap of BSCS

#### SEMESTER 1

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                               | Credit Hours |
|---------|---------------------------|-------------|------------------------------------------------------------|--------------|
| 1.      | None                      | GSC 114     | Applied Physics                                            | 2            |
| 2.      | None                      | GSL 113     | Applied Physics Lab                                        | 1            |
| 3.      | None                      | CSC 114     | Introduction to Information & Communication Technology     | 2            |
| 4.      | None                      | CSL 114     | Introduction to Information & Communication Technology Lab | 1            |
| 5.      | None                      | CSC 113     | Computer Programming                                       | 3            |

|                           |      |         |                                 |                |
|---------------------------|------|---------|---------------------------------|----------------|
| <b>6.</b>                 | None | CSL 113 | Computer Programming Lab        | 1              |
| <b>7.</b>                 | None | GSC 221 | Discrete Mathematics            | 3              |
| <b>8.</b>                 | None | ISL 101 | Islamic Studies/Ethics          | 2              |
| <b>9.</b>                 | None | CSC 308 | Professional Practices & Ethics | 2              |
| <b>10.</b>                | None | ISL 107 | Tajweed                         | 1 Contact Hour |
| <b>Total Credit Hours</b> |      |         |                                 | 17             |

\*Only for Muslim students

## SEMESTER 2

| <b>Sr. No.</b>            | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                      | <b>Credit Hours</b> |
|---------------------------|----------------------------------|--------------------|------------------------------------------|---------------------|
| <b>1.</b>                 | None                             | GSC 122            | Probability and Statistics               | 3                   |
| <b>2.</b>                 | CSC 113                          | CSC 210            | Object Oriented Programming              | 3                   |
| <b>3.</b>                 | CSC 113                          | CSL 210            | Object Oriented Programming Lab          | 1                   |
| <b>4.</b>                 | GSC 114                          | CEN 122            | Digital Design                           | 2                   |
| <b>5.</b>                 | GSC 114                          | CEL 122            | Digital Design Lab                       | 1                   |
| <b>6.</b>                 | None                             | GSC 110            | Applied Calculus and Analytical Geometry | 3                   |
| <b>7.</b>                 | None                             | ENG 101            | Functional English                       | 3                   |
| <b>8.</b>                 | None                             | PAK 103            | Pakistan Studies & Global Perspective    | 2                   |
| <b>9.</b>                 | ISL 107                          | ISL 108            | Understanding Quran-I                    | 1 Contact Hour      |
| <b>Total Credit Hours</b> |                                  |                    |                                          | 18                  |

\*Only for Muslim students

### SEMESTER 3

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                          | Credit Hours   |
|---------------------------|---------------------------|-------------|---------------------------------------|----------------|
| 1.                        | None                      | HSS 219     | Civic and Community Engagement        | 2              |
| 2.                        | None                      | GSC 121     | Linear Algebra                        | 3              |
| 3.                        | GSC 110                   | GSC 211     | Multivariable Calculus                | 3              |
| 4.                        | None                      | CEN 223     | Computer Communication & Networks     | 3              |
| 5.                        | None                      | CEL 223     | Computer Communication & Networks Lab | 1              |
| 6.                        | CSC 113                   | CSC 221     | Data Structure & Algorithm            | 3              |
| 7.                        | CSC 113                   | CSL 221     | Data Structure & Algorithm Lab        | 1              |
| 8.                        | None                      | ENG 134     | Communication Skills                  | 2              |
| 9.                        | ISL 108                   | ISL 109     | Understanding Quran-II                | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                       | <b>18</b>      |

\*Only for Muslim students

### SEMESTER 4

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                  | Credit Hours |
|---------|---------------------------|-------------|-----------------------------------------------|--------------|
| 1.      | None                      | -           | Social Sciences Elective                      | 3            |
| 2.      | CEN 122                   | CEN 323     | Computer Organization and Assembly Language   | 2            |
| 3.      | CEN 122                   | CEL 323     | Computer Organization & Assembly Language Lab | 1            |

|                           |         |         |                                 |                |
|---------------------------|---------|---------|---------------------------------|----------------|
| 4.                        | None    | ENG 123 | Expository Writing              | 3              |
| 5.                        | None    | CSC 220 | Database Management Systems     | 3              |
| 6.                        | None    | CSL 220 | Database Management Systems Lab | 1              |
| 7.                        | None    | HSS 423 | Entrepreneurship                | 2              |
| 8.                        | None    | SEN 220 | Software Engineering            | 3              |
| 9.                        | ISL 109 | ISL 110 | Understanding Quran – III       | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                 | 18             |

\*Only for Muslim students

## SEMESTER 5

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                      | Credit Hours   |
|---------------------------|---------------------------|-------------|-----------------------------------|----------------|
| 1.                        | CSC 221                   | CSC 320     | Operating Systems                 | 3              |
| 2.                        | CSC 221                   | CSL 320     | Operating Systems Lab             | 1              |
| 3.                        | None                      | CSC 315     | Theory of Automata                | 3              |
| 4.                        | CSC 221                   | CSC 321     | Design and Analysis of Algorithms | 3              |
| 5.                        | CEN 323                   | CSC 327     | Computer Architecture             | 2              |
| 6.                        | CEN 323                   | CSL 327     | Computer Architecture Lab         | 1              |
| 7.                        | None                      | CSC 412     | Artificial Intelligence           | 3              |
| 8.                        | None                      | CSL 411     | Artificial Intelligence Lab       | 1              |
| 9.                        | ISL 110                   | ISL 111     | Understanding Quran – IV          | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                   | 18             |

\*Only for Muslim students

## SEMESTER 6

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                  | Credit Hours   |
|---------------------------|---------------------------|-------------|-------------------------------|----------------|
| 1.                        | CSC 315                   | CSC 323     | Compiler Construction         | 2              |
| 2.                        | CSC 315                   | CSL 323     | Compiler Construction Lab     | 1              |
| 3.                        |                           |             | Elective 1 (2+1)              | 2              |
| 4.                        |                           |             | Elective 1 Lab                | 1              |
| 5.                        |                           |             | Elective 2 (2+1)              | 2              |
| 6.                        |                           |             | Elective 2 Lab                | 1              |
| 7.                        |                           |             | Elective 3 (3+0 or 2+1)       | 3              |
| 8.                        | SEN 220                   | SEN 321     | Human Computer Interaction    | 2              |
| 9.                        | SEN 220                   | SEN 320     | Human Computer Interaction La | 1              |
| 10.                       | ISL 111                   | ISL 112     | Understanding Quran – V       | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                               | <b>15</b>      |

\*Only for Muslim students

## SEMESTER 7

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title           | Credit Hours |
|---------|---------------------------|-------------|------------------------|--------------|
| 1.      | None                      | FYP 400     | Final Year Project     | 3            |
| 2.      | CSC 220                   | CSC 470     | Advanced Databases     | 2            |
| 3.      | CSC 220                   | CSL 470     | Advanced Databases Lab | 1            |

|                           |         |         |                            |                |
|---------------------------|---------|---------|----------------------------|----------------|
| 4.                        |         |         | Elective Supporting Course | 3              |
| 5.                        |         |         | Elective 4 (2+1)           | 2              |
| 6.                        |         |         | Elective 4 Lab             | 1              |
| 7.                        |         |         | Elective 5 (2+1)           | 2              |
| 8.                        |         |         | Elective 5 Lab             | 1              |
| 9.                        | ISL 112 | ISL 113 | Seerah-I                   | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                            | 15             |

\*Only for Muslim students

## SEMESTER 8

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                         | Credit Hours |
|---------------------------|---------------------------|-------------|--------------------------------------|--------------|
| 1.                        | None                      | FYP 400     | Final Year Project                   | 3            |
| 2.                        | None                      | CSC 407     | Information Security                 | 3            |
| 3.                        | CSC 320                   | AIC 302     | Parallel & Distributed Computing     | 2            |
| 4.                        | CSC 320                   | AIL 302     | Parallel & Distributed Computing Lab | 1            |
| 5.                        |                           |             | Elective 6 (2+1)                     | 2            |
| 6.                        |                           |             | Elective 6 Lab                       | 1            |
| 7.                        |                           |             | Elective 7 (3+0 or 2+1)              | 3/2          |
| 8.                        | ISL 113                   | ISL 114     | Seerah –II                           | 0            |
| <b>Total Credit Hours</b> |                           |             |                                      | 15           |

\*Only for Muslim students

### List of Elective Courses (21 credit hours)

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                              | Credit Hours |
|---------|---------------------------|-------------|-------------------------------------------|--------------|
| 1.      | CSC321                    | CSC521      | Advanced Design and Analysis of Algorithm | 3            |
| 2.      | CEN223                    | CEN 451     | Data Encryption and Security              | 3            |
| 3.      | CSC220                    | CSC452      | Data Mining                               | 3            |
| 4.      | CSC220                    | CSC454      | Data Warehousing                          | 3            |
| 5.      | CSC220                    | CSC490      | Introduction to Cloud Computing           | 3            |
| 6.      | CSC325                    | SEN 455     | Knowledge Based Management System         | 3            |
| 7.      | SEN 220                   | CSC458      | Management Information System             | 3            |
| 8.      | CSC325                    | CSC441      | Natural Language Processing               | 3            |
| 9.      | CSC325                    | CSC449      | Neural Networks & Fuzzy Logic             | 3            |
| 10.     | CSC113                    | SEN 422     | Semantic Computing                        | 3            |
| 11.     | SEN 220                   | SEN 458     | Software Requirement Engineering          | 3            |
| 12.     | CSC323                    | CSC451      | Theory of Programming Languages           | 3            |
| 13.     | SEN 220                   | SEN 456     | Usability Engineering                     | 3            |



|            |         |         |                                |   |
|------------|---------|---------|--------------------------------|---|
| <b>14.</b> | CEN223  | CSC489  | Ubiquitous Computing           | 3 |
| <b>15.</b> | SEN220  | SEN410  | Software Project Management    | 3 |
| <b>16.</b> | SEN220  | SEN420  | Software Quality Assurance     | 3 |
| <b>17.</b> | SEN 220 | SEN 447 | Software Testing               | 3 |
| <b>18.</b> | CEN223  | ITC 411 | Cyber Security                 | 3 |
| <b>19.</b> | CSC325  | CSC464  | Computer Vision                | 3 |
| <b>20.</b> | CSC221  | CSC404  | Block chain Technologies       | 3 |
| <b>21.</b> | CSC325  | CSC448  | Introduction to Bioinformatics | 3 |
| <b>22.</b> | CEN223  | CEN449  | Internet of Things             | 3 |
| <b>23.</b> | CSC220  | CSC488  | Big Data Analytics             | 2 |
| <b>24.</b> | CSC220  | CSL 488 | Big Data Analytics Lab         | 1 |
| <b>25.</b> | CSC210  | CSC444  | Computer Graphics              | 2 |
| <b>26.</b> | CSC210  | CSL 444 | Computer Graphics Lab          | 1 |
| <b>27.</b> | None    | CSC484  | Content Management             | 2 |
| <b>28.</b> | None    | CSL 484 | Content Management Lab         | 1 |
| <b>29.</b> | CSC210  | CEN 444 | Digital Image Processing       | 2 |
| <b>30.</b> | CSC210  | CEL 444 | Digital Image Processing Lab   | 1 |

|            |         |         |                                            |   |
|------------|---------|---------|--------------------------------------------|---|
| <b>31.</b> | CSC210  | CSC319  | Game Development and Design                | 2 |
| <b>32.</b> | CSC210  | CSL 319 | Game Development and Design Lab            | 1 |
| <b>33.</b> | CSC325  | CSC466  | Introduction to Biometrics                 | 2 |
| <b>34.</b> | CSC325  | CSL 466 | Introduction to Biometrics Lab             | 1 |
| <b>35.</b> | CSC220  | CSC487  | Introduction to Data Science               | 2 |
| <b>36.</b> | CSC220  | CSL 487 | Introduction to Data Science Lab           | 1 |
| <b>37.</b> | CSC210  | CSC341  | Mobile Application Development             | 2 |
| <b>38.</b> | CSC210  | CSL 341 | Mobile Application Development Lab         | 1 |
| <b>39.</b> | None    | SEN 493 | Multimedia Systems                         | 2 |
| <b>40.</b> | None    | SEL493  | Multimedia Systems Lab                     | 1 |
| <b>41.</b> | CSC325  | CEN 458 | Robotics                                   | 2 |
| <b>42.</b> | CSC325  | CEL 458 | Robotics Lab                               | 1 |
| <b>43.</b> | CSC210  | SEN 448 | Software Application for Mobile Device     | 2 |
| <b>44.</b> | CSC210  | SEL448  | Software Application for Mobile Device Lab | 1 |
| <b>45.</b> | SEN 220 | SEN 457 | Software Design and Architecture           | 2 |



|            |         |         |                                      |   |
|------------|---------|---------|--------------------------------------|---|
| <b>46.</b> | SEN 220 | SEL457  | Software Design and Architecture Lab | 1 |
| <b>47.</b> | CSC210  | CSC313  | Visual Programming                   | 2 |
| <b>48.</b> | CSC210  | CSL 313 | Visual Programming Lab               | 1 |
| <b>49.</b> | CSC113  | SEN 310 | Web Engineering                      | 2 |
| <b>50.</b> | CSC113  | SEL310  | Web Engineering Lab                  | 1 |
| <b>51.</b> | CSC325  | AIC301  | Machine Learning                     | 2 |
| <b>52.</b> | CSC325  | AIL 301 | Machine Learning Lab                 | 1 |
| <b>53.</b> | CSC325  | AIC401  | Deep Learning                        | 2 |
| <b>54.</b> | CSC325  | AIL 401 | Deep Learning Lab                    | 1 |
| <b>55.</b> | None    | CSC400  | Quantum Computing                    | 2 |
| <b>56.</b> | None    | CSL400  | Quantum Computing Lab                | 1 |

### List of Social Sciences Courses

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>           | <b>Credit Hours</b> |
|----------------|----------------------------------|--------------------|-------------------------------|---------------------|
| <b>1.</b>      | None                             | HSS 107            | Introduction to Psychology    | 3                   |
| <b>2.</b>      | None                             | HSS 115            | Introduction to Media studies | 3                   |
| <b>3.</b>      | None                             | BES 103            | Critical Thinking             | 3                   |



### List of Elective Supporting Courses (3 credit hours)

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                       | Credit Hours |
|---------|---------------------------|-------------|------------------------------------|--------------|
| 1.      | None                      | MKT 110     | Principles of Marketing            | 3            |
| 2.      | None                      | FIN 201     | Fundamentals of Finance            | 3            |
| 3.      | None                      | MGT 111     | Principles of Management           | 3            |
| 4.      | None                      | MGT 242     | Organizational Theory and Behavior | 3            |

## BS Information Technology (4 Years)

**Campus:** Islamabad, Karachi & Lahore

**Regular Programme Duration:** 4 Years (8 Semesters)

**Programme Timing:** Morning

### Eligibility Criteria:

- Minimum 50% marks in Intermediate (HSSC) Examination (Pre-Medical/ Pre-Engg.) or equivalent qualification with Mathematics certified by IBCC.
- Pre-Medical students must pass deficiency courses of Mathematics of 6 credit hours within one year.

### Program Education Objectives:

1. Apply principles and practices of information technology and computing knowledge to solve challenging problems in relevant professions.
2. Demonstrate the ability to use modern tools learnt during the degree program to design and develop effective solutions.
3. Exhibit managerial capabilities with ethical and moral values.

## ROADMAP

### SEMESTER 1

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                                               | Credit Hours |
|---------|---------------------------|-------------|------------------------------------------------------------|--------------|
| 1.      | None                      | CSC 114     | Introduction to Information & Communication Technology     | 2            |
| 2.      | None                      | CSL 114     | Introduction to Information & Communication Technology Lab | 1            |
| 3.      | None                      | CSC 113     | Computer Programming                                       | 3            |
| 4.      | None                      | CSL 113     | Computer Programming Lab                                   | 1            |
| 5.      | None                      | GSC 114     | Applied Physics                                            | 2            |

|                           |      |         |                                   |                |
|---------------------------|------|---------|-----------------------------------|----------------|
| <b>6.</b>                 | None | GSL 113 | Applied Physics Lab               | 1              |
| <b>7.</b>                 | None | ISL 101 | Islamic Studies / Ethics          | 2              |
| <b>8.</b>                 | None | GSC 221 | Discrete Mathematics              | 3              |
| <b>9.</b>                 | None | CSC 308 | Professional Practices and Ethics | 2              |
| <b>10.</b>                | None | ISL 107 | Tajweed                           | 1 Contact Hour |
| <b>Total Credit Hours</b> |      |         |                                   | <b>17</b>      |

\*Only for Muslim students

## SEMESTER 2

| <b>Sr. No.</b>            | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                      | <b>Credit Hours</b> |
|---------------------------|----------------------------------|--------------------|------------------------------------------|---------------------|
| <b>1.</b>                 | CSC 113                          | CSC 210            | Object Oriented Programming              | 3                   |
| <b>2.</b>                 | CSC 113                          | CSL 210            | Object Oriented Programming Lab          | 1                   |
| <b>3.</b>                 | GSC 114                          | CEN 122            | Digital Design                           | 2                   |
| <b>4.</b>                 | GSC 114                          | CEL 122            | Digital Design Lab                       | 1                   |
| <b>5.</b>                 | None                             | GSC 110            | Applied Calculus and Analytical Geometry | 3                   |
| <b>6.</b>                 | None                             | GSC 122            | Probability and Statistics               | 3                   |
| <b>7.</b>                 | None                             | PAK 103            | Pakistan Studies and Global Perspective  | 2                   |
| <b>8.</b>                 | None                             | ENG 101            | Functional English                       | 3                   |
| <b>9.</b>                 | ISL 107                          | ISL 108            | Understanding Quran-I                    | 1 Contact Hour      |
| <b>Total Credit Hours</b> |                                  |                    |                                          | <b>18</b>           |



### SEMESTER 3

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                          | Credit Hours   |
|--------------------|---------------------------|-------------|---------------------------------------|----------------|
| 1.                 | CSC 113                   | CSC 221     | Data Structure & Algorithm            | 3              |
| 2.                 | CSC 113                   | CSL 221     | Data Structure & Algorithm Lab        | 1              |
| 3.                 | None                      | SEN 220     | Software Engineering                  | 3              |
| 4.                 | None                      | CEN 223     | Computer Communication & Networks     | 3              |
| 5.                 | None                      | CEL 223     | Computer Communication & Networks Lab | 1              |
| 6.                 | None                      | GSC 121     | Linear Algebra                        | 3              |
| 7.                 | None                      | HSS 219     | Civic and Community Engagement        | 2              |
| 8.                 | None                      | ENG 134     | Communication Skills                  | 2              |
| 9.                 | ISL 108                   | ISL 109     | Understanding Quran-II                | 1 Contact Hour |
| Total Credit Hours |                           |             |                                       | 18             |

\*Only for Muslim students

## SEMESTER 4

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                      | Credit Hours   |
|--------------------|---------------------------|-------------|-----------------------------------|----------------|
| 1.                 | CSC 210                   | ITC 226     | Web Systems and Technologies      | 2              |
| 2.                 | CSC 210                   | ITL 226     | Web Systems and Technologies Lab  | 1              |
| 3.                 | CSC 221                   | CSC 321     | Design and Analysis of Algorithms | 3              |
| 4.                 | None                      | HSS 423     | Entrepreneurship                  | 2              |
| 5.                 | HSS 118                   | ENG 123     | Expository Writing                | 3              |
| 6.                 | GSC 110                   | GSC 211     | Multivariable Calculus            | 3              |
| 7.                 | None                      |             | Social Sciences Elective          | 3              |
| 8.                 | ISL 109                   | ISL 110     | Understanding Quran-III           | 1 Contact Hour |
| Total Credit Hours |                           |             |                                   | 17             |

\*Only for Muslim students

**SEMESTER 5**

| <b>Sr. No.</b>            | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>                   | <b>Credit Hours</b> |
|---------------------------|----------------------------------|--------------------|---------------------------------------|---------------------|
| <b>1.</b>                 | None                             | CSC 220            | Database Management System            | 3                   |
| <b>2.</b>                 | None                             | CSL 220            | Database Management System Lab        | 1                   |
| <b>3.</b>                 | CSC 221                          | CSC 320            | Operating Systems                     | 3                   |
| <b>4.</b>                 | CSC 221                          | CSL 320            | Operating Systems Lab                 | 1                   |
| <b>5.</b>                 | CEN 223                          | ITC 312            | System and Network Administration     | 3                   |
| <b>6.</b>                 | CEN 223                          | ITL 312            | System and Network Administration Lab | 1                   |
| <b>7.</b>                 |                                  |                    | Elective 1 (3+0 or 2+1)               | 3                   |
| <b>8.</b>                 | CEN 223                          | CSC 407            | Information Security                  | 3                   |
| <b>9.</b>                 | ISL 110                          | ISL 111            | Understanding Quran-IV                | 1 Contact Hour      |
| <b>Total Credit Hours</b> |                                  |                    |                                       | <b>18</b>           |

\*Only for Muslim students

## SEMESTER 6

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                                    | Credit Hours   |
|--------------------|---------------------------|-------------|-------------------------------------------------|----------------|
| 1.                 | CEN 122                   | CEN 323     | Computer Organization and Assembly Language     | 2              |
| 2.                 | CEN 122                   | CEL 323     | Computer Organization and Assembly Language Lab | 1              |
| 3.                 | CSC 210                   | CSC 411     | Artificial Intelligence                         | 2              |
| 4.                 | CSC 210                   | CSL 411     | Artificial Intelligence Lab                     | 1              |
| 5.                 | ITC 312                   | ITC 324     | Information Technology Infrastructure           | 3              |
| 6.                 |                           |             | Elective 2 (2+1)                                | 3              |
| 7.                 |                           |             | Elective 3 (2+1)                                | 3              |
| 8.                 | ISL 111                   | ISL 112     | Understanding Quran-V                           | 1 Contact Hour |
| Total Credit Hours |                           |             |                                                 | 15             |

\*Only for Muslim students



## SEMESTER 7

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                                    | Credit Hours   |
|--------------------|---------------------------|-------------|-------------------------------------------------|----------------|
| 1.                 | CEN 122                   | CEN 323     | Computer Organization and Assembly Language     | 2              |
| 2.                 | CEN 122                   | CEL 323     | Computer Organization and Assembly Language Lab | 1              |
| 3.                 | CSC 210                   | CSC 411     | Artificial Intelligence                         | 2              |
| 4.                 | CSC 210                   | CSL 411     | Artificial Intelligence Lab                     | 1              |
| 5.                 | ITC 312                   | ITC 324     | Information Technology Infrastructure           | 3              |
| 6.                 |                           |             | Elective 2 (2+1)                                | 3              |
| 7.                 |                           |             | Elective 3 (2+1)                                | 3              |
| 8.                 | ISL 111                   | ISL 112     | Understanding Quran-V                           | 1 Contact Hour |
| Total Credit Hours |                           |             |                                                 | 15             |

\* Compulsory for Muslim students only

## SEMESTER 8

| Sr. No.            | Pre-requisite Course Code | Course Code | Course Title                           | Credit Hours   |
|--------------------|---------------------------|-------------|----------------------------------------|----------------|
| 1.                 | None                      | FYP 400     | Final Year Project                     | 3              |
| 2.                 | CSC320                    | AIC 302     | Parallel and Distributed Computing     | 2              |
| 3.                 | CSC320                    | AIL 302     | Parallel and Distributed Computing Lab | 1              |
| 4.                 |                           |             | Elective Supporting                    | 3              |
| 5.                 |                           |             | Elective 6 (3+0 or 2+1)                | 3              |
| 6.                 |                           |             | Elective 7 (3+0 or 2+1)                | 3              |
| 7.                 | ISL 113                   | ISL 114     | Seerah-II                              | 1 Contact Hour |
| Total Credit Hours |                           |             |                                        | 15             |

\* Compulsory for Muslim students only

### List of Domain Elective Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                               | Credit Hours |
|---------|---------------------------|-------------|--------------------------------------------|--------------|
| 1.      | ITC 226                   | ITB 471     | E Commerce                                 | 3            |
| 2.      | None                      | ITC 425     | Business Processing Re-engineering         | 3            |
| 3.      | None                      | ITC 457     | Knowledge Management System & Technologies | 3            |
| 4.      | CSC 220                   | CSC 452     | Data Mining                                | 3            |
| 5.      | CSC 220                   | CSC 454     | Data Warehousing                           | 3            |
| 6.      | ITC 226                   | SEN 421     | Semantic Web                               | 3            |
| 7.      | SEN 220                   | SEN 411     | Software Testing                           | 3            |
| 8.      | SEN 220                   | SEN 456     | Usability Engineering                      | 3            |
| 9.      | CSC 220                   | CSC 426     | Business Intelligence and Analytic         | 3            |
| 10.     | None                      | SEN 427     | Information Systems Auditing and Assurance | 3            |
| 11.     | SEN 220                   | SEN 428     | Service Oriented Architecture              | 3            |
| 12.     | SEN 220                   | SEN 420     | Software Quality Assurance                 | 3            |

|            |         |         |                                |   |
|------------|---------|---------|--------------------------------|---|
| <b>13.</b> | CEN 223 | EET 455 | Wireless Communication         | 3 |
| <b>14.</b> | None    | SEN 320 | Human Computer Interaction     | 3 |
| <b>15.</b> | CSC 221 | CSC 404 | Blockchain Technologies        | 3 |
| <b>16.</b> | CSC 221 | CSC 448 | Introduction to Bioinformatics | 3 |
| <b>17.</b> | CEN 223 | CSC 450 | Internet of Things             | 3 |
| <b>18.</b> | CEN 223 | SEN 459 | Software Defined Network       | 3 |
| <b>19.</b> | SEN 220 | CSC 489 | Ubiquitous Computing           | 3 |
| <b>20.</b> | GSC 221 | GSC 445 | Operation Research             | 3 |
| <b>21.</b> | None    | CSC 458 | Management Information System  | 3 |
| <b>22.</b> | SEN 220 | SEN 410 | Software Project Management    | 3 |
| <b>23.</b> | CSC 210 | CSC 313 | Visual Programming             | 2 |
| <b>24.</b> | CSC 210 | CSL 313 | Visual Programming Lab         | 1 |
| <b>25.</b> | CSC 220 | CSC 487 | Introduction to Data Science   | 2 |

|            |         |         |                                      |   |
|------------|---------|---------|--------------------------------------|---|
| <b>26.</b> | CSC 220 | CSL 487 | Introduction to Data Science Lab     | 1 |
| <b>27.</b> | CSC 210 | CEN 444 | Digital Image Processing             | 2 |
| <b>28.</b> | CSC 210 | CEL 444 | Digital Image Processing Lab         | 1 |
| <b>29.</b> | CSC 210 | CSC 444 | Computer Graphics                    | 2 |
| <b>30.</b> | CSC 210 | CSL 444 | Computer Graphics Lab                | 1 |
| <b>31.</b> | CSC 220 | CSC 468 | Advanced Databases                   | 2 |
| <b>32.</b> | CSC 220 | CSL 468 | Advanced Databases Lab               | 1 |
| <b>33.</b> | CSC 210 | CSC 341 | Mobile Application Development       | 2 |
| <b>34.</b> | CSC 210 | CSL 341 | Mobile Application Development Lab   | 1 |
| <b>35.</b> | None    | SEN 493 | Multimedia Systems                   | 2 |
| <b>36.</b> | None    | SEL 493 | Multimedia Systems Lab               | 1 |
| <b>37.</b> | SEN 220 | SEN 457 | Software Design and Architecture     | 2 |
| <b>38.</b> | SEN 220 | SEL 457 | Software Design and Architecture Lab | 1 |

|                          |         |         |                                      |           |
|--------------------------|---------|---------|--------------------------------------|-----------|
| <b>39.</b>               | CSC 113 | SEN 310 | Web Engineering                      | 2         |
| <b>40.</b>               | CSC 113 | SEL 310 | Web Engineering Lab                  | 1         |
| <b>41.</b>               | CSC 220 | CSC 488 | Big Data Analytics                   | 2         |
| <b>42.</b>               | CSC 220 | CSL 488 | Big Data Analytics Lab               | 1         |
| <b>43.</b>               | None    | CSC 484 | Content Management                   | 2         |
| <b>44.</b>               | None    | CSL 484 | Content Management Lab               | 1         |
| <b>45.</b>               | CSC 411 | CSC 413 | Introduction to Machine Learning     | 2         |
| <b>46.</b>               | CSC 411 | CSL 413 | Introduction to Machine Learning Lab | 1         |
| <b>Total Credit Hrs.</b> |         |         |                                      | <b>21</b> |

#### List of Social Sciences Courses

| <b>Sr. No.</b> | <b>Pre-requisite Course Code</b> | <b>Course Code</b> | <b>Course Title</b>           | <b>Credit Hours</b> |
|----------------|----------------------------------|--------------------|-------------------------------|---------------------|
| <b>1.</b>      | None                             | HSS 107            | Introduction to Psychology    | 3                   |
| <b>2.</b>      | None                             | HSS 115            | Introduction to Media studies | 3                   |
| <b>3.</b>      | None                             | BES 103            | Critical Thinking             | 3                   |



### List of Elective Supporting Courses

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                       | Credit Hours |
|---------|---------------------------|-------------|------------------------------------|--------------|
| 1.      | None                      | MKT 110     | Principles of Marketing            | 3            |
| 2.      | None                      | FIN 201     | Fundamentals of Finance            | 3            |
| 3.      | None                      | MGT 111     | Principles of Management           | 3            |
| 4.      | None                      | MGT 242     | Organizational Theory and Behavior | 3            |

## MS (Artificial Intelligence)

**Campus:** BUIC H-11 & Karachi

**Minimum Entry Level:** 4 years Bachelor degree in AI/CS/IT/EE/CE/SE/Robotics/Mechatronics or equivalent

**Admission Criteria:** HEC recognized 4 years Bachelor degree in AI/CS/IT/EE/CE/SE/Robotics/Mechatronics or equivalent with CGPA 2.0/4.0 (Semester System) or 50% marks (Annual System). NTS-GAT (General)/ GRE/University entry test passed with 50% marks.

The following courses are recommended to be completed before entering the MS Artificial Intelligence (AI) program.

- Programming Fundamentals OR Computer Programming
- Data Structures & Algorithms OR Design & Analysis of Algorithms
- Database Systems

### Road Map

#### Summary of Credit Hours

| Sr. No. | Courses as per HEC new GE Policy 2023                                                | Credit Hours/Contact Hours |
|---------|--------------------------------------------------------------------------------------|----------------------------|
|         |                                                                                      | Proposed New Road Map      |
| 1.      | Major/Disciplinary                                                                   | 18                         |
| 2.      | Electives toward specialization                                                      | <b>6</b>                   |
| 3.      | Thesis                                                                               | 6                          |
| 4.      | Deficiency course in case of candidate from other domain or interdisciplinary domain |                            |
| Total   |                                                                                      | <b>30</b>                  |

## Semester 1

| Sr. No.                   | Proposed Road map aligned with HEC PG Policy |             |                                                        |              |                                                       |
|---------------------------|----------------------------------------------|-------------|--------------------------------------------------------|--------------|-------------------------------------------------------|
|                           | Pre-requisite Course Code                    | Course Code | Course Title                                           | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
|                           |                                              | CSC 711     | Advanced Artificial Intelligence                       | 03           | 3,4,7,9                                               |
|                           |                                              | DSC 708     | Statistical and Mathematical Methods for Data Analysis | 03           | 4,8,16                                                |
|                           |                                              | ESC 701     | Research Methodology                                   | 03           | 4                                                     |
| <b>Total Credit Hours</b> |                                              |             |                                                        | 09           |                                                       |

## Semester 2

| Sr. No.                   | Proposed Road map aligned with HEC new PG Policy |             |                                                 |              |                                                       |
|---------------------------|--------------------------------------------------|-------------|-------------------------------------------------|--------------|-------------------------------------------------------|
|                           | Pre-requisite Course Code                        | Course Code | Course Title                                    | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
|                           |                                                  | CSC 719     | Machine Learning                                | 03           | 3,4,7,9                                               |
|                           |                                                  | AIC 703     | Advanced Knowledge Representation and Reasoning | 03           | 4,11,16                                               |
|                           |                                                  |             | Elective-1                                      | 03           |                                                       |
| <b>Total Credit Hours</b> |                                                  |             |                                                 | 09           |                                                       |

### Semester 3

| Sr. No.                   | Proposed Road map aligned with HEC new PG Policy |                   |                         |              |                                                       |
|---------------------------|--------------------------------------------------|-------------------|-------------------------|--------------|-------------------------------------------------------|
|                           | Pre-requisite Course Code                        | Course Code       | Course Title            | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
|                           |                                                  | DSC 707           | Deep Learning           | 03           | 3,4,7,9                                               |
|                           |                                                  |                   | Elective-II             | 03           |                                                       |
|                           |                                                  | THS 799/Elec-Code | Thesis-1 / Elective-III | 03           | 4,8,9                                                 |
| <b>Total Credit Hours</b> |                                                  |                   |                         | 09           |                                                       |

### Semester 4

| Sr. No.                   | Proposed Road map aligned with HEC new PG Policy |                   |                         |              |                                                      |
|---------------------------|--------------------------------------------------|-------------------|-------------------------|--------------|------------------------------------------------------|
|                           | Pre-requisite Course Code                        | Course Code       | Course Title            | Credit Hours | 17 UNSDGs alignment (please mention relevant SDS No. |
|                           |                                                  | THS799/Elec- Code | Thesis-II / Elective-IV | 03           | 4,8,9                                                |
| <b>Total Credit Hours</b> |                                                  |                   |                         | 03           |                                                      |

### University Requirement

| Sr. No | Course Code | Course Title         | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
|--------|-------------|----------------------|--------------|-------------------------------------------------------|
| 1      | ESC 701     | Research Methodology | 03           | 4                                                     |

## List of Elective Courses

| Sr. No. | Proposed Road map aligned with HEC new PG Policy |             |                                             |              |                                                       |
|---------|--------------------------------------------------|-------------|---------------------------------------------|--------------|-------------------------------------------------------|
|         | Pre-requisite Course Code                        | Course Code | Course Title                                | Credit Hours | 17 UN SDGs alignment (please mention relevant SDG No. |
|         |                                                  | CSC 721     | Decision Support Systems                    | 3            | 4,5,10                                                |
|         |                                                  | CSC 715     | Intelligent Agents                          | 3            | 4,9,11                                                |
|         |                                                  | CSC 741     | Advanced Natural Language Processing        | 3            | 3,4,11                                                |
|         |                                                  | CEN 745     | Advanced Digital Image Processing           | 3            | 3,4,11                                                |
|         |                                                  | CSC 751     | Pattern Recognition                         | 3            | 3,4,9                                                 |
|         |                                                  | CSC 722     | Advanced Information Theory                 | 3            | 4,8                                                   |
|         |                                                  | SEN 764     | Ontology Engineering                        | 3            | 3,4,11                                                |
|         |                                                  | THS 799     | Thesis                                      | 6            | 4,8,9                                                 |
|         |                                                  | CSC 723     | Game Theory                                 | 3            | 4,9                                                   |
|         |                                                  | AIC 704     | Optimization Techniques                     | 3            | 4,9,16                                                |
|         |                                                  | AIC 705     | Artificial Intelligence in Embedded systems | 3            | 3,4,9,11                                              |
|         |                                                  | AIC706      | AI for Healthcare Applications              | 3            | 3,4,9                                                 |
|         |                                                  | AIC 707     | Ethics of Artificial Intelligence           | 3            | 4,9,16                                                |

## MS - Computer Science (2 Years)

**Campus:** Islamabad, Karachi & Lahore

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:** HEC recognized 4 years Bachelor degree in CS/SE/CE/EE/IT or equivalent or MCS/MIT with CGPA 2.0/4.0 (Semester System) or 50% marks (Annual System). NTS-GAT (General)/Gre/ University entry test passed with 50% marks. Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### Deficiency Course:

1. Computer Programming
2. Analysis of Algorithms
3. Computer Architecture
4. Operating Systems
5. Theory of Automata

## ROADMAP

### Semester 1

| Course Code | Course Title                                  | Credits  |
|-------------|-----------------------------------------------|----------|
| CSC 503     | Advanced Theory of Computation                | 3        |
| CSC 521     | Advanced Design and Analysis of Algorithms    | 3        |
| ESC 701     | Research Methodology (University Requirement) | 3        |
|             | <b>Total</b>                                  | <b>9</b> |

### Semester 2

| Course Code | Course Title                   | Credits  |
|-------------|--------------------------------|----------|
| CSC 720     | Advanced Operating Systems     | 3        |
| CEN 720     | Advanced Computer Architecture | 3        |
|             | Elective I                     | 3        |
|             | <b>Total</b>                   | <b>9</b> |

### Semester 3

| Course Code | Course Title           | Credits  |
|-------------|------------------------|----------|
|             | Elective II            | 3        |
|             | Elective III           | 3        |
|             | Thesis I / Elective IV | 3        |
|             | <b>Total</b>           | <b>9</b> |

### Semester 4

| Course Code                  | Course Title           | Credits   |
|------------------------------|------------------------|-----------|
|                              | Thesis II / Elective V | <b>3</b>  |
|                              | <b>Total</b>           | <b>3</b>  |
| <b>Total Program Credits</b> |                        | <b>30</b> |

### ELECTIVE COURSES – MS-CS Program

| Course Codes | Course Names                                     | Credits |
|--------------|--------------------------------------------------|---------|
| CSC 504      | Ubiquitous Computing                             | 3       |
| CSC 505      | Intelligent User Interface Design and Evaluation | 3       |
| CSC 515      | Virtual Reality                                  | 3       |
| CSC 516      | Game Theory                                      | 3       |
| CSC 701      | Computer Supported Cooperative Work              | 3       |
| SEN 720      | Advanced Human Computer Interaction              | 3       |
| SEN 756      | Advanced Usability Engineering                   | 3       |
| CSC 518      | Decision Support Systems                         | 3       |
| CSC 715      | Intelligent Agents                               | 3       |
| CSC 719      | Machine Learning                                 | 3       |
| DSC 707      | Deep Learning                                    | 3       |
| CSC 741      | Advanced Natural Language Processing             | 3       |
| CEN 745      | Advanced Digital Image Processing                | 3       |
| CSC 749      | Advanced Neural Networks and Fuzzy Logic         | 3       |
| CSC 751      | Pattern Recognition                              | 3       |
| CSC 764      | Computer Vision                                  | 3       |

|         |                                                           |   |
|---------|-----------------------------------------------------------|---|
| CSC 750 | Intelligent Tutoring Systems                              | 3 |
| EET 519 | Distributed Networking                                    | 3 |
| EET 520 | Network Administration and Management                     | 3 |
| EET 556 | Mobile Communications and Networking                      | 3 |
| EET 702 | Advanced Network Security                                 | 3 |
| EET 713 | Advanced Network Design                                   | 3 |
| EET 716 | Advanced Topics in Wireless Networking and Communications | 3 |
| EET 718 | Network Performance Evaluation                            | 3 |
| EET 761 | Network Protocols and Standards                           | 3 |
| CSC 781 | Cloud Computing                                           | 3 |
| CSC 553 | Advanced Information Theory                               | 3 |
| CSC 746 | Advanced Data Mining                                      | 3 |
| CSC 747 | Text Mining                                               | 3 |
| CSC 752 | Advanced DBMS                                             | 3 |
| CSC 753 | Distributed Databases                                     | 3 |
| CSC 754 | Object Oriented Databases                                 | 3 |
| CSC 755 | Web based DBMS                                            | 3 |
| CSC 756 | Multimedia Databases                                      | 3 |
| CSC 760 | Advanced Data Warehousing                                 | 3 |
| CSC 514 | Information Retrieval Techniques                          | 3 |
| CSC 764 | Ontology Engineering                                      | 3 |
| CSC 761 | Semantic Web                                              | 3 |

### **MS- Data Science (2 Years)**

**Campus:** Islamabad

**Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

**Eligibility Criteria:** HEC recognized 4 years Bachelor degree in CS/SE/CE/EE/IT/ Statistics/Mathematics or equivalent with CGPA 2.0/4.0 (Semester System) or 50%



marks (Annual System). **OR**

MIT/MCS/M.Sc. (Computer Science) / MPhil Mathematics/ Mphil Statistics or equivalent with CGPA 2.0/4.0 (Semester System) or 50% marks (Annual System).

NTS GAT (General)/ GRE/ University entry test passed with 50% marks.

**Specialization:**

1. Programming Fundamentals
2. Data Structures & Algorithms OR Design & Analysis of Algorithms
3. Database Systems

Student selected for admission having deficiency in the above stated courses shall be required to study the courses, which must be passed in the first two semesters. Deficiency courses shall be determined by the Departmental Selection Committee, before admitting the student. A student cannot register in MS courses, unless all specified deficiency courses have been passed. Deficiency course shall be offered with undergraduate students and per credit hour fee of undergraduate program shall be applied.

## ROADMAP

### Semester 1

| Course Code | Course Title                                           | Credit Hours |
|-------------|--------------------------------------------------------|--------------|
| DSC 500     | Tools and Techniques in Data Science                   | 03           |
| DSC 501     | Statistical and Mathematical Methods for Data Analysis | 03           |
| ESC 701     | Research Methodology                                   | 03           |
|             | <b>Total</b>                                           | <b>09</b>    |

### Semester 2

| Course Code | Course Title       | Credit Hours |
|-------------|--------------------|--------------|
| DSC 700     | Big Data Analytics | 03           |
| CSC 719     | Machine Learning   | 03           |
|             | Elective I         | 03           |
|             | <b>Total</b>       | <b>09</b>    |

### Semester 3

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
| DSC 707     | Deep Learning             | 03           |
|             | Elective II               | 03           |
|             | Thesis I / Elective – III | 03           |
|             | Total                     | 09           |

### Semester 4

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
|             | Thesis II / Elective – IV | 03           |
|             | Total                     | 03           |
|             | TOTAL CREDIT HOURS        | <b>30</b>    |

### Elective Courses – MS Data Science

| Course Code | Course Title                             | Credit Hours |
|-------------|------------------------------------------|--------------|
| DSC 703     | Data Visualization                       | 3            |
| DSC 704     | Distributed Data Engineering             | 3            |
| DSC 706     | Unstructured Data Processing             | 3            |
| CSC 518     | Decision Support Systems                 | 3            |
| CSC 715     | Intelligent Agents                       | 3            |
| CSC 741     | Advanced Natural Language Processing     | 3            |
| CEN 745     | Advanced Digital Image Processing        | 3            |
| CSC 749     | Advanced Neural Networks and Fuzzy Logic | 3            |
| CSC 751     | Pattern Recognition                      | 3            |
| CSC 764     | Computer Vision                          | 3            |
| CSC 781     | Cloud Computing                          | 3            |
| CSC 554     | Advanced Information Theory              | 3            |
| CSC 747     | Text Mining                              | 3            |
| CSC 752     | Advanced DBMS                            | 3            |
| CSC 760     | Advanced Data Warehousing                | 3            |
| SEN 764     | Ontology Engineering                     | 3            |

## MS - Information Security (2 Years)

**Campus:** Islamabad

**Program Timing:** Evening

**Regular Program Duration:** 2 Years (4 Semesters)

**Eligibility Criteria:**

4 years degree in BSIS/BSE/BEE/BET/BSCS/CE/IT/Electronics/Equivalent with minimum 130 Cr Hrs and CGPA 2.0/4.0 (Semester System) or 50% marks (Annual System) or MCS/M.Sc (Computer Science) with minimum CGPA 2.0/4.0 or 50% marks in annual system. NTS-GAT (General)/ GRE (General)/University entry test, passed with 50% marks. Additionally, applicants must provide HEC verification of all academic certificates / degrees.

### ROADMAP

#### Semester 1

| Course Code | Course Title                               | Credit Hours |
|-------------|--------------------------------------------|--------------|
| ISC 511     | Number Theory                              | 03           |
| CSC 521     | Advanced Design and Analysis of Algorithms | 03           |
| ISC 512     | Computer and Network Security              | 03           |
|             | <b>Total</b>                               | <b>09</b>    |

#### Semester 2

| Course Code   | Course Title          | Credit Hours |
|---------------|-----------------------|--------------|
| Elective Code | Elective I            | 03           |
| CSC 704       | Advanced Cryptography | 03           |
| ESC 701       | Research Methodology  | 03           |
|               | <b>Total</b>          | <b>09</b>    |

#### Semester 3

| Course Code                | Course Title            | Credit Hours |
|----------------------------|-------------------------|--------------|
| Elective Code              | Elective II             | 03           |
| ESC 500 /<br>Elective Code | Thesis I / Elective III | 03           |
| Elective Code              | Elective IV             | 03           |
|                            | <b>Total</b>            | <b>09</b>    |

## Semester 4

| Course Code                | Course Title              | Credit Hours |
|----------------------------|---------------------------|--------------|
| ESC 500 /<br>Elective Code | Thesis II / Elective V    | 03           |
|                            | Total                     | 03           |
|                            | <b>TOTAL CREDIT HOURS</b> | <b>30</b>    |

## Elective Courses

| Course Code | Course Title                                   | Credit Hours |
|-------------|------------------------------------------------|--------------|
| ESC 500     | Thesis                                         | 06           |
| EEN 510     | Stochastic Process                             | 03           |
| EET 519     | Distributed Networking                         | 03           |
| EET 520     | Network Administration and Management          | 03           |
| EET 553     | Information theory and coding                  | 03           |
| EET 556     | Mobile Communication and Networking            | 03           |
| ISC 732     | Advance Computer Security                      | 03           |
| ISC 733     | Information Hiding                             | 03           |
| ISC 734     | Wireless Network Security                      | 03           |
| ISC 735     | Cloud Computing Security                       | 03           |
| ISC 736     | Cyber Warfare                                  | 03           |
| ISC 737     | Computer and Network Forensics                 | 03           |
| ISC 738     | Ethical Hacking                                | 03           |
| ISC 739     | Cyber Crimes and Laws                          | 03           |
| ISC 740     | Quantum Cryptography                           | 03           |
| ISC 747     | Advanced Cryptanalysis                         | 03           |
| ISC 741     | Algebraic Cryptanalysis                        | 03           |
| ISC 742     | Intrusion Detection and Prevention             | 03           |
| ISC 743     | Penetration Testing and Vulnerability Analysis | 03           |
| EET 710     | Advanced Computer Networks                     | 03           |
| CSC 720     | Advanced Operating Systems                     | 03           |

|         |                                 |    |
|---------|---------------------------------|----|
| ISC 731 | Information Security Management | 03 |
| ISC 748 | Blockchain Technology           | 03 |

## MS – Maths (2 Years)

**Campus:** Islamabad

**Regular Program Duration:** 2 Years (4 Semesters)

**Available Specialization:**

Information Management

Computer Networks

Artificial Intelligence

Human Computer Interaction

**Program Timing:** Evening

**Entry Requirements:**

4 years Bachelor degree in BS ( Mathematics/M.Sc (Mathematics) or equivalent, with minimum 130 Credit Hours and CGPA 2.0/4.0 (Semester System) or 50% marks (Annual System). NTS-GAT (General) or GRE passed with 50% marks.

Additionally, applicants must provide HEC verification of all academic certificates / degrees.

## ROADMAP

### Semester 1

| Course Code | Course Code | Course Code |
|-------------|-------------|-------------|
| MAT-        | Core-I      | 03          |
| MAT-        | Core-II     | 03          |
| MAT-        | Core-III    | 03          |
|             | Total       | 09          |

### Semester 2

| Course Code | Course Title                                  | Credit Hours |
|-------------|-----------------------------------------------|--------------|
| MAT-        | Core-IV                                       | 03           |
| ESC-        | Research Methodology (University requirement) | 03           |
| MAT-        | Elective I                                    | 03           |
|             | Total                                         | 09           |

### Semester 3

| Course Code | Course Title | Credit Hours |
|-------------|--------------|--------------|
| MAT-        | Elective-II  | 03           |
| MAT-500     | Thesis       | 03           |
|             | Total        | 06           |

### Semester 4

| Course Code | Course Title              | Credit Hours |
|-------------|---------------------------|--------------|
| MAT-        | Elective – III            | 03           |
| MAT-500     | Thesis                    | 03           |
|             | Total                     | 06           |
|             | <b>TOTAL CREDIT HOURS</b> | <b>30</b>    |

### List of Core Courses

| Course Code | Course Title                                        | Credit Hours |
|-------------|-----------------------------------------------------|--------------|
| MAT-710     | Advanced Partial Differential Equations             | 03           |
| MAT-711     | Advanced Functional Analysis                        | 03           |
| MAT-713     | Advanced Group Theory                               | 03           |
| MAT-610     | Mathematical Techniques for Boundary Value Problems | 03           |
| MAT-511     | Integral Equations and Applications                 | 03           |
| MAT-727     | Riemannian Geometry                                 | 03           |
| MAT-728     | ODEs and Computational Linear Algebra               | 03           |
| MAT-729     | Advanced Mathematical Physics                       | 03           |
| MAT-500     | Thesis                                              | 06           |

### University Requirement Course

|         |                      |    |
|---------|----------------------|----|
| ESC-501 | Research Methodology | 03 |
|---------|----------------------|----|

### List of Elective Courses

|         |                    |    |
|---------|--------------------|----|
| MAT-510 | Fluids Dynamics-I  | 03 |
| MAT-512 | Fixed Point Theory | 03 |
| MAT-513 | Number Theory      | 03 |



|         |                                                      |    |
|---------|------------------------------------------------------|----|
| MAT-514 | Spectral Theory in Hilbert Spaces                    | 03 |
| MAT-611 | Topological Vector Spaces                            | 03 |
| MAT-712 | Numerical Solution of Partial differential Equations | 03 |
| MAT-714 | Non-Newtonian Fluid                                  | 03 |
| MAT-715 | Perturbation Methods                                 | 03 |
| MAT-716 | Finite Element Method                                | 03 |
| MAT-717 | Near Rings                                           | 03 |
| MAT-718 | Fuzzy Logic/Fuzzy Algebra                            | 03 |
| MAT-719 | Advanced Ring Theory                                 | 03 |
| MAT-720 | Topological Algebras                                 | 03 |
| MAT-721 | Commutative Semi Group Rings                         | 03 |
| MAT-722 | General Relativity                                   | 03 |
| MAT-723 | Advanced Analytical Dynamics                         | 03 |
| MAT-724 | Heat and Mass Transfer                               | 03 |
| MAT-730 | Numerical Optimization                               | 03 |
| MAT-731 | Advanced Cryptography                                | 03 |
| MAT-732 | Probability Models and Applications                  | 03 |
| MAT-733 | Advanced Modern Algebra with Applications            | 03 |
| MAT-734 | Spectral Methods in Fluid Dynamics                   | 03 |
| MAT-735 | Simple Linear Regression Models                      | 03 |
| MAT-736 | Lattice Boltzmann Method                             | 03 |
| MAT-737 | Fluids Dynamics-II                                   | 03 |

## MS- Telecom & Networking (2 Years)

**Campuses:** Islamabad, Karachi

**Regular Program Duration:** 2 Years (4 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

Four Year degree as BS/ BCE/ BSE/ BE/ BSC (Hons.) in Computer Sciences/Software Engineering/Computer Engineering/ Information Technology is required. A minimum of 130 credit hours in Bachelors and a CGPA of 2.0/4.0 or 50% Marks in annual system or MCS/M.Sc. (Computer Science) with minimum CGPA 2.0/4.0 or 50% marks in annual system. NTS GAT/GRE (General)/ University Test passed with 50% marks. Additionally, applicants must provide HEC verification of all academic certificates/ degrees.

## ROADMAP

### Semester 1

| Course Code | Course Title                          | Credits  |
|-------------|---------------------------------------|----------|
| ESC 701     | Research Methodology                  | 3        |
| EET 511     | Digital Communication Systems         | 3        |
| EET 520     | Network Administration and Management | 3        |
|             | <b>Total</b>                          | <b>9</b> |

### Semester 2

|         |                                      |          |
|---------|--------------------------------------|----------|
| ISC 512 | Computer and Network Security        | 3        |
| EET 556 | Mobile Communications and Networking | 3        |
|         | Elective-I                           | 3        |
|         | <b>Total</b>                         | <b>9</b> |

### Semester 3

|                       |                        |          |
|-----------------------|------------------------|----------|
| EET 519               | Distributed Networking | 3        |
|                       | Elective-II            | 3        |
| ESC 502/Elective Code | Thesis/Elective-III    | 3        |
|                       | <b>Total</b>           | <b>9</b> |

### Semester 4

|                                      |                    |           |
|--------------------------------------|--------------------|-----------|
| ESC 502(Continued)/<br>Elective Code | Thesis/Elective-IV | 3         |
|                                      | <b>Total</b>       | <b>30</b> |

### List of Courses

| Course Code | Course Title                          | Credits |
|-------------|---------------------------------------|---------|
| ISC 512     | Computer and Network Security         | 3       |
| EET 556     | Mobile Communications and Networking  | 3       |
| EET 511     | Digital Communication Systems         | 3       |
| EET 519     | Distributed Networking                | 3       |
| EET 520     | Network Administration and Management | 3       |

### University Requirement

|         |                      |   |
|---------|----------------------|---|
| ESC 701 | Research Methodology | 3 |
|---------|----------------------|---|

### Electives

|         |                                          |     |
|---------|------------------------------------------|-----|
| ESC 502 | Thesis                                   | 3+3 |
| EET 710 | Advanced Computer Networks               | 3   |
| EET 523 | Communication System Analysis and Design | 3   |
| EET 549 | Advanced Satellite Communication         | 3   |
| EET 560 | Telecommunication Network Management     | 3   |
| EET 703 | DSP Application in Telecommunication     | 3   |
| EET 705 | Broadband Technologies and Components    | 3   |



|         |                                         |   |
|---------|-----------------------------------------|---|
| EET 706 | Advanced Optical Fiber Networks         | 3 |
| EET 707 | Telecommunications Business Environment | 3 |
| EET 717 | Network Planning and Evaluation         | 3 |
| EET 751 | Antenna and Microwave Engineering       | 3 |
| EET 553 | Information Theory and Coding           | 3 |
| EET 756 | Telecommunication Switching Systems     | 3 |
| EET 765 | Radio Frequency Engineering             | 3 |
| CSC 704 | Advanced Cryptography                   | 3 |
| CSC 708 | Advanced Simulation and Modeling        | 3 |
| CSC 709 | Detection and Estimation Theory         | 3 |
| CSC 757 | IP Multimedia System                    | 3 |
| EET 702 | Advanced Network Security               | 3 |
| SEC 604 | Blockchain Technology                   | 3 |
| EET 752 | IoT Architecture and Protocols          | 3 |
| EET 753 | Privacy and Security in IoT             | 3 |

## PhD – Computer Science (3 Years)

**Campus:** Islamabad & Karachi

**Program Duration:** 3 Years (6 Semesters)

Available Specialization

Information Management

Computer Networks

Artificial Intelligence

Human Computer Interaction

**Program Timing:** Evening

### Eligibility Criteria:

18 years of education minimum 60% or 3 CGPA in relevant discipline GRE/ GAT (Subject with 60%). NTS – GAT / GRE(General)/ University entry test passed with 50% marks. Additionally, applicants must provide HEC verification of all academic certificates/ degrees.

## ROADMAP

### Semester 1

| Sr.# | Course Code | Course Title                    | Credit Hours |
|------|-------------|---------------------------------|--------------|
| 1    | ESC 801     | Research Methods in PhD Studies | 3            |
| 2    |             | Elective I                      | 3            |
| 3    |             | Elective II                     | 3            |

### Semester 2

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    |             | Elective III | 3            |
| 2    |             | Elective IV  | 3            |
| 3    |             | Elective V   | 3            |

### Semester 3

| Sr.# | Course Code | Course Title       | Credit Hours |
|------|-------------|--------------------|--------------|
| 1    |             | Comprehensive exam | 0            |
| 2    | THS 900     | PhD Thesis         | 9            |

### Semester 4

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

### Semester 5

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

### Semester 6

| Sr.# | Course Code | Course Title | Credit Hours |
|------|-------------|--------------|--------------|
| 1    | THS 900     | PhD Thesis   | 9            |

### List of Electives Courses

| Sr.# | Course Code | Course Title                          | Credit Hours |
|------|-------------|---------------------------------------|--------------|
| 1    | CEN 807     | Advance distributed systems           | 3            |
| 2    | SEN 810     | Advance Neural Networks & Fuzzy Logic | 3            |
| 3    | SEN 811     | Data Ware housing and Mining          | 3            |
| 4    | DSC 807     | Advanced Deep Learning                | 3            |
| 5    | EET 851     | Mobile and ad-hoc Networks            | 3            |



|           |         |                                                       |   |
|-----------|---------|-------------------------------------------------------|---|
| <b>7</b>  | CSC 851 | Advanced Pattern Recognition                          | 3 |
| <b>8</b>  | SEN 862 | Emerging Trends in Big Data Analytics                 | 3 |
| <b>9</b>  | CSC 881 | Advanced Cloud Computing                              | 3 |
| <b>10</b> | CSC 820 | Advance Topics in Operating Systems                   | 3 |
| <b>11</b> | EET 835 | Advance Topics in 5G and Beyond Communications        | 3 |
| <b>12</b> | EET 850 | Wireless Sensor Networks                              | 3 |
| <b>13</b> | SEN 802 | Special Topics in Software Engineering                | 3 |
| <b>14</b> | SEN 810 | Secure Software Systems                               | 3 |
| <b>15</b> | EET 832 | Advance topics in Network Security                    | 3 |
| <b>16</b> | CEN 820 | High Performance Computer Architecture                | 3 |
| <b>17</b> | DSC 800 | Advanced Data Analytics                               | 3 |
| <b>18</b> | CSC 841 | Advanced Computational Linguistics                    | 3 |
| <b>19</b> | DSC 802 | Advanced Data Visualization                           | 3 |
| <b>20</b> | CSC 860 | Advanced Complexity Theory and Algorithms             | 3 |
| <b>21</b> | CEN 808 | Advanced Techniques in System Modeling and Simulation | 3 |

|           |         |                                                       |   |
|-----------|---------|-------------------------------------------------------|---|
| <b>22</b> | SEN 816 | Middleware For Networked and Distributed Systems      | 3 |
| <b>23</b> | CSC 800 | Advanced AI Networking                                | 3 |
| <b>24</b> | ESC 816 | Advanced Wireless Communications                      | 3 |
| <b>25</b> | SEN 861 | Semantic Web Modeling and Applications                | 3 |
| <b>26</b> | SEN 864 | Knowledge Representation and Reasoning                | 3 |
| <b>27</b> | ISC 821 | Advance Topics in Cryptography                        | 3 |
| <b>28</b> | SEN 808 | Computer and Cybersecurity                            | 3 |
| <b>29</b> | SEN 809 | Internet of Things: Design and Applications           | 3 |
| <b>30</b> | EET 837 | Advanced Data Communication Systems                   | 3 |
| <b>31</b> | SEN 853 | Advanced Power-Aware Computing                        | 3 |
| <b>32</b> | ISC 843 | Advanced Penetration Testing & Vulnerability Analysis | 3 |

### List of Deficiency Courses

Deficiency courses can be selected from 700-level courses of MS CS Road-map, as recommended by the Admission Committee.

## PhD – Maths (3 Years)

**Campus:** Islamabad

**Program Duration:** 3 years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria:

18 year of education in Mathematics or relevant discipline from an HEC recognized university with a minimum CGPA of 3.00/4.00 (semester system) or 60% marks (annual system). GAT (Computer Science)/GRE (Computer Science) with minimum 60% marks, or University Based Subject Test passed with minimum 70% marks. Additionally, applicants must provide HEC verification of all academic certificates / degrees.

## ROADMAP

### Semester 1

| Sr. No. | Course Code | Course Title                    | Credit Hours |
|---------|-------------|---------------------------------|--------------|
| 1       | ESC 801     | Research Methods in PhD Studies | 3            |
| 2       |             | Elective I                      | 3            |
| 3       |             | Elective II                     | 3            |

### Semester 2

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       |             | Elective III | 3            |
| 2       |             | Elective IV  | 3            |
| 3       |             | Elective V   | 3            |

### Semester 3

| Sr. No. | Course Code | Course Title       | Credit Hours |
|---------|-------------|--------------------|--------------|
| 1       |             | Comprehensive exam | 0            |
| 2       | THS 900     | PhD Thesis         | 9            |

### Semester 4

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 9            |

### Semester 5

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 9            |

### Semester 6

| Sr. No. | Course Code | Course Title | Credit Hours |
|---------|-------------|--------------|--------------|
| 1       | THS 900     | PhD Thesis   | 9            |

### List of Electives Courses

| Sr. No. | Course Code | Course Title                                  | Credit Hours |
|---------|-------------|-----------------------------------------------|--------------|
| 1       | MAT 810     | Advanced Elastodynamics                       | 3            |
| 2       | MAT 811     | Modelling and Simulation of Dynamical Systems | 3            |
| 3       | MAT 812     | Advanced Finite Element Analysis              | 3            |
| 4       | MAT 813     | Advanced Multivariate Methods and Analysis    | 3            |
| 5       | MAT 814     | Advanced Near Rings                           | 3            |



|           |         |                                                               |   |
|-----------|---------|---------------------------------------------------------------|---|
| <b>6</b>  | MAT 815 | Advanced Quantum Theory                                       | 3 |
| <b>7</b>  | MAT 816 | Advanced Semigroup Theory                                     | 3 |
| <b>8</b>  | MAT 817 | Nonlinear Waves                                               | 3 |
| <b>9</b>  | MAT 818 | Advanced Partial Differential Equations II                    | 3 |
| <b>9</b>  | MAT 819 | Advanced Functional Analysis II                               | 3 |
| <b>10</b> | MAT 820 | Advanced Numerical Solution of Partial differential Equations | 3 |
| <b>11</b> | MAT 821 | Advanced Group Theory II                                      | 3 |
| <b>12</b> | MAT 822 | Advanced Non-Newtonian Fluid                                  | 3 |
| <b>13</b> | MAT 823 | Advanced Perturbation Methods                                 | 3 |
| <b>14</b> | MAT 824 | Advanced topics in Cryptography                               | 3 |
| <b>15</b> | MAT 825 | Advanced Fluid Dynamics-II                                    | 3 |
| <b>16</b> | MAT 826 | Advanced Lie Group Methods for Differential Equations         | 3 |
| <b>17</b> | MAT 827 | Advanced Heat and Mass Transfer                               | 3 |

### List of Deficiency Courses

Deficiency courses can be selected from 700-level courses of MS Mathematics Roadmap, as recommended by the Admission Committee.



## ASSOCIATE DEGREE IN COMPUTER SCIENCE

18 year of education in Mathematics or relevant discipline from an HEC recognized university with a minimum CGPA of 3.00/4.00 (semester system) or 60% marks (annual system).

**Program:** Associate Degree Programme in Computer Science

**Department:** Computer Sciences

**Duration:** 2 Years, 4 Semesters

**Campus:** Lahore

### Eligibility Criteria:

- Minimum 50% marks in Intermediate/12 years schooling/A- Level (HSSC) or Equivalent with Mathematics are required for admission in Associate Degree Computing. \*Equivalency certificate by IBCC will be required in case of education from some other country or system.
- The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics (06 credits) in first two semesters.
- A minimum 2.0 CGPA (Cumulative Grade Point Average) on a scale of 4.0 is required for award of AD Computing degree.
- The candidates with AD Computing Degrees are eligible for admission in 5th Semester of BS Computing Programmes. Such students shall complete the deficiency courses of General Education (if any) during 5th to 8th Semester.
- The candidates who acquired ADP Computing Degrees prior to the admission criteria (as stated above) are also eligible for admission in 5th Semester of BS Computing Programmes. Such students shall complete the deficiency courses of General Education (if any) during 5th to 8th Semester.

## ROADMAP

## SEMESTER-1

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                                               | Credit Hours   |
|---------------------------|---------------------------|-------------|------------------------------------------------------------|----------------|
| 1.                        | None                      | GSC 114     | Applied Physics                                            | 2              |
| 2.                        | None                      | GSL 113     | Applied Physics Lab                                        | 1              |
| 3.                        | None                      | CSC 114     | Introduction to Information & Communication Technology     | 2              |
| 4.                        | None                      | CSL 114     | Introduction to Information & Communication Technology Lab | 1              |
| 5.                        | None                      | CSC 113     | Computer Programming                                       | 3              |
| 6.                        | None                      | CSL 113     | Computer Programming Lab                                   | 1              |
| 7.                        | None                      | GSC 221     | Discrete Mathematics                                       | 3              |
| 8.                        | None                      | ISL 101     | Islamic Studies/Ethics                                     | 2              |
| 9.                        | None                      | CSC 308     | Professional Practices & Ethics                            | 2              |
| 10.                       | None                      | ISL 107     | Tajweed                                                    | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                                            | <b>17</b>      |

\*Only for Muslim students

## SEMESTER-2

| Sr. No. | Pre-requisite Course Code | Course Code | Course Title                    | Credit Hours |
|---------|---------------------------|-------------|---------------------------------|--------------|
| 1.      | None                      | GSC 122     | Probability and Statistics      | 3            |
| 2.      | CSC 113                   | CSC 210     | Object Oriented Programming     | 3            |
| 3.      | CSC 113                   | CSL 210     | Object Oriented Programming Lab | 1            |
| 4.      | GSC 114                   | CEN 122     | Digital Design                  | 2            |

|                           |         |         |                                          |                |
|---------------------------|---------|---------|------------------------------------------|----------------|
| 5.                        | GSC 114 | CEL 122 | Digital Design Lab                       | 1              |
| 6.                        | None    | GSC 110 | Applied Calculus and Analytical Geometry | 3              |
| 7.                        | None    | ENG 101 | Functional English                       | 3              |
| 8.                        | None    | PAK 103 | Pakistan Studies & Global Perspective    | 2              |
| 9.                        | ISL 107 | ISL 108 | Understanding Quran-I                    | 1 Contact Hour |
| <b>Total Credit Hours</b> |         |         |                                          | 18             |

\*Only for Muslim students

### SEMESTER-3

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                          | Credit Hours   |
|---------------------------|---------------------------|-------------|---------------------------------------|----------------|
| 1.                        | None                      | HSS 219     | Civic and Community Engagement        | 2              |
| 2.                        | None                      | GSC 121     | Linear Algebra                        | 3              |
| 3.                        | GSC 110                   | GSC 211     | Multivariable Calculus                | 3              |
| 4.                        | None                      | CEN 223     | Computer Communication & Networks     | 3              |
| 5.                        | None                      | CEL 223     | Computer Communication & Networks Lab | 1              |
| 6.                        | CSC 113                   | CSC 221     | Data Structure & Algorithm            | 3              |
| 7.                        | CSC 113                   | CSL 221     | Data Structure & Algorithm Lab        | 1              |
| 8.                        | None                      | ENG 134     | Communication Skills                  | 2              |
| 9.                        | ISL 108                   | ISL 109     | Understanding Quran-II                | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                       | 18             |

\*Only for Muslim students

## SEMESTER-4

| Sr. No.                   | Pre-requisite Course Code | Course Code | Course Title                                  | Credit Hours   |
|---------------------------|---------------------------|-------------|-----------------------------------------------|----------------|
| 1.                        | None                      | -           | Social Sciences Elective                      | 3              |
| 2.                        | CEN 122                   | CEN 323     | Computer Organization and Assembly Language   | 2              |
| 3.                        | CEN 122                   | CEL 323     | Computer Organization & Assembly Language Lab | 1              |
| 4.                        | None                      | ENG 123     | Expository Writing                            | 3              |
| 5.                        | None                      | CSC 220     | Database Management Systems                   | 3              |
| 6.                        | None                      | CSL 220     | Database Management Systems Lab               | 1              |
| 7.                        | None                      | HSS 423     | Entrepreneurship                              | 2              |
| 8.                        | None                      | SEN 220     | Software Engineering                          | 3              |
| 9.                        | ISL 109                   | ISL 110     | Understanding Quran – III                     | 1 Contact Hour |
| <b>Total Credit Hours</b> |                           |             |                                               | <b>18</b>      |

\*Only for Muslim students



# Bahria University Health Sciences Campus, Karachi (BUHSCK)

## MPHIL IN BIOCHEMISTRY

**Campus:** BUHSCK

**Program Timing:** Morning

**Duration:** 2 years

**Eligibility Criteria:**

16 years of education with MBBS/BDS/MSc Biochemistry/BS Biochemistry from PMDC/HEC

recognized university institute ‘with minimum CGPA 2.0/4.0 OR 507” marks where CGPA is not given.

Completion of one year house job at PMDC recognized institution.

Valid PMDC/PMC registration certificate.

HEC attestation on candidate’s local degree and cumulative transcript (at the back of original

degree & transcript) Two years teaching experience in the relevant subject will be given preference.

**NB:** All mentioned certificates duly attested by HEC to be produced at the time of interview

otherwise candidate will become ineligible for selection process.

### INTRODUCTION

The Master of Philosophy (MPhil) degree program of Biochemistry at Bahria University Health Sciences aims to prepare postgraduates in health professional educational institutions, particularly in areas of basic health science teaching & research. This will promote faculty development in basic health sciences education, and provide opportunity for junior health sciences faculty including Bahria University Health Sciences to enhance their professional career as a teacher and researcher in the field of basic health sciences.



### **Objectives of the Program:**

At the end of program the MPhil graduate should be able to:

- a. Demonstrate professional attitudes and ethical values to fulfill social and professional responsibility to community.
- b. Apply critical inquiry for promotion of evidence based theoretical knowledge to practice.
- c. Analyze the research skills including analytical, synthesis, application, implementation, quality and implications.
- d. Work as a responsible, dedicated, effective teacher and keen researcher independently.
- e. Display interpersonal skills including communication with experts, self-critic, social skills, team work etc.
- f. Perform life-long learning skills by accepting one's limitations to knowledge and with an urge to continuously update the knowledge.
- g. Present research results in national / international scientific forums and publish in journals.

### **Outcomes of the Program:**

The program is committed to produce:

- a. Teachers and researchers equipped with professional attitudes and ethical values to fulfill social and professional responsibility to community.
- b. Professionals inculcated with application of critical inquiry for promotion of evidence based theoretical knowledge for practice.
- c. Graduates equipped with analytical, synthesis, application implementation, quality, implications etc. skills
- d. Responsible, effective teachers and researchers in basic health sciences with ability to work independently
- e. Interpersonal skills in professionals including communication with experts, self-critical, social skills, team work etc.
- f. Life-long learning skills in professionals by accepting one's limitations to knowledge and urge to continuously update the knowledge.
- g. Good presenters of research results in national / international scientific forums along with publications in journals.

### **BIOCHEMISTRY PROGRAM CORE COURSES**

- 
1. MED-701: Research Methodology, Biostatistics & Epidemiology
  2. MED-712: Medical Biology & Genetic
  3. MED-713: Medical Education, Ethics & Writing
  4. MED-714: Instruments and Animal use in research
  5. MED-715,716&717: Journal Club
  6. MED-718,719&720: Teaching internship
  7. THS-700 & 701: Thesis I (THS 700) & II (THS 701)
  8. BIO 750: General metabolism and biological oxidation
  9. BIO 751: Clinical biochemistry and heme metabolism

### **BIOCHEMISTRY PROGRAM ELECTIVE COURSES**

1. BIO 752: Chemical basis of life, Diet and Nutrition
2. BIO 753: Endocrinology
3. BIO 754: Water, electrolyte balance and imbalance
4. BIO 755: Enzymology and vitamins
5. BIO 756: Acid base disorders
6. BIO 757: Biochemistry of cancer
7. BIO 758: Mineral and detoxification

## **MPHIL BIOCHEMISTRY PROGRAM ROADMAP**

### **Semester 1**

| <b>Sr. #</b> | <b>Course Code</b> | <b>Course Title</b>                           | <b>Credit Hours</b> | <b>Theory</b> | <b>Practical</b> |
|--------------|--------------------|-----------------------------------------------|---------------------|---------------|------------------|
| 1            | MED 701            | Research Methodology (University Requirement) | 3+0                 | 3             | 0                |
| 2            | MED 712            | Medical Biology & Genetics                    | 2+0                 | 2             | 0                |
| 3            | MED 713            | Medical Education, Ethics & Writing           | 2+0                 | 2             | 0                |
| 4            | MED 714            | Instruments and Animal use in research        | 2(1+1)              | 1             | 1                |

|                                         |         |                                   |                |           |           |
|-----------------------------------------|---------|-----------------------------------|----------------|-----------|-----------|
| 5                                       | MED 715 | Journal Club (Essential)-1        | No credit hour | 0         | 0         |
| 6                                       | MED 718 | Teaching Internship (Essential)-1 | No credit hour | 0         | 0         |
| <b>Total Credit Hours in Semester-1</b> |         |                                   | <b>09</b>      | <b>08</b> | <b>01</b> |

### Semester 2

| Sr. #                                   | Course Code               | Course Title                                | Credit Hours   | Theory   | Practical |
|-----------------------------------------|---------------------------|---------------------------------------------|----------------|----------|-----------|
| 1                                       | BIO 750                   | General metabolism and biological oxidation | 3+0            | 3        | 0         |
| 2                                       | BIO 751                   | Clinical biochemistry and heme metabolism   | 3(2+1)         | 2        | 1         |
| 3                                       | XXX<br>XXX/<br>XXX<br>XXX | Elective -I                                 | 3+0            | 3        | 0         |
| 4                                       | MED 716                   | Journal Club (Essential)-2                  | No credit hour | 0        | 0         |
| 5                                       | MED 719                   | Teaching Internship (Essential)-2           | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-2</b> |                           |                                             | <b>09</b>      | <b>8</b> | <b>1</b>  |

### Semester 3

| Sr. #                                   | Course Code | Course Title                      | Credit Hours   | Theory    | Practical |
|-----------------------------------------|-------------|-----------------------------------|----------------|-----------|-----------|
| 1                                       | XXX XXX/    | Elective-II                       | 3+0            | 3         | 0         |
| 2                                       | XXX XXX/    | Elective-III                      | 3+0            | 3         | 0         |
| 3                                       | THS 700     | Thesis-I                          | 3+0            | 3         | 0         |
| 4                                       | MED 717     | Journal Club (Essential)-3        | No credit hour | 0         | 0         |
| 5                                       | MED 720     | Teaching Internship (Essential)-3 | No credit hour | 0         | 0         |
| <b>Total Credit Hours in Semester-3</b> |             |                                   | <b>09</b>      | <b>09</b> | <b>0</b>  |

## Semester 4

| Sr. #                                   | Course Code | Course Title | Credit Hours | Theory   | Practical |
|-----------------------------------------|-------------|--------------|--------------|----------|-----------|
| 1                                       | THS 701     | Thesis-II    | 3+0          | 3        | 0         |
| Total                                   |             |              | 3+0          | 3        | 0         |
| <b>Total Credit Hours in Semester-4</b> |             |              | <b>3</b>     | <b>3</b> | <b>0</b>  |

## LIST OF ELECTIVE COURSES

| Sr.No. | Course Code | Course Title                            | Credit Hours | Theory | Practical |
|--------|-------------|-----------------------------------------|--------------|--------|-----------|
| 1.     | PHY 762     | Physiology of Health, Fitness& Exercise | 3+0          | 3      | 0         |
| 2.     | PHY 763     | Heme & Immune system                    | 3+0          | 3      | 0         |
| 3.     | PHY 764     | Gastrointestinal Physiology             | 3+0          | 3      | 0         |
| 4.     | PHY 765     | Neurophysiology and special senses      | 3+0          | 3      | 0         |
| 5.     | PHY 766     | Renal Physiology                        | 3+0          | 3      | 0         |
| 6.     | PHY 767     | Endocrine and Reproductive Physiology   | 3+0          | 3      | 0         |
| 7.     | PHY 768     | Electrophysiology                       | 3(1+2)       | 1      | 2         |

## MPHIL PHYSIOLOGY

**Campus:** BUHSCK

**Program Timing:** Morning

**Duration:** 2 years

**Eligibility Criteria:** 16 years of education with MBBS/BDS/MSc Biochemistry/BS Biochemistry from PMDC/HEC recognized university institute 'with minimum CGPA 2.0/4.0 OR 507" marks where CGPA is not given.



Completion of one-year house job at PMDC recognized institution.

Valid PMDC/PMC registration certificate.

HEC attestation on candidate's local degree and cumulative transcript (at the back of original degree & transcript) Two years teaching experience in the relevant subject will be given preference.

**NB:** All mentioned certificates duly attested by HEC to be produced at the time of interview

otherwise candidate will become ineligible for selection process.

## **INTRODUCTION**

The Master of Philosophy (MPhil) degree program of Physiology at Bahria University Health Sciences aims to prepare post-graduation health professional educational institutions particularly in areas of basic health science teaching & research. This will promote faculty development in basic health sciences education, and provide opportunity for junior health sciences faculty including Bahria University Health Sciences to enhance their professional career as a teacher and researcher in the field of basic health sciences.

## MPHIL -PHYSIOLOGY PROGRAM - ROADMAP

### SEMESTER- 1

| Sr.No                                   | Course Code | Course Title                         | Credit Hours   | Theory    | Practical |
|-----------------------------------------|-------------|--------------------------------------|----------------|-----------|-----------|
| 1                                       | MED 701     | Research Methodology                 | 3+0            | 3         | 0         |
| 2                                       | MED 712     | Medical Biology & Genetics           | 2+0            | 2         | 0         |
| 3                                       | MED 713     | Medical Education, Ethics & Writing  | 2+0            | 2         | 0         |
| 4                                       | MED 714     | Instruments & Animal use in research | 2(1+1)         | 1         | 1         |
| 5                                       | MED 715     | Journal Club (Essential)-1           | No credit hour | 0         | 0         |
| 6                                       | MED 718     | Teaching Internship (Essential)-1    | No credit hour | 0         | 0         |
| <b>Total Credit Hours in Semester-1</b> |             |                                      | <b>09</b>      | <b>08</b> | <b>1</b>  |

### SEMESTER- 2

| Sr.No                                   | Course Code | Course Title                                | Credit Hours   | Theory    | Practical |
|-----------------------------------------|-------------|---------------------------------------------|----------------|-----------|-----------|
| 1                                       | PHY 760     | General ,Neuromuscular and Blood Physiology | 3+0            | 3         | 0         |
| 2                                       | PHY 761     | Cardiorespiratory Physiology                | 3(2+1)         | 2         | 1         |
| 3                                       | XXXXX       | Elective -I                                 | 3+0            | 3         | 0         |
| 4                                       | MED 716     | Journal Club (Essential)-2                  | No credit hour | 0         | 0         |
| 5                                       | MED 719     | Teaching Internship (Essential)-2           | No credit hour | 0         | 0         |
| <b>Total Credit Hours in Semester-2</b> |             |                                             | <b>09</b>      | <b>08</b> | <b>1</b>  |

### SEMESTER- 3

| Sr.No | Course Code | Course Title               | Credit Hours   | Theory | Practical |
|-------|-------------|----------------------------|----------------|--------|-----------|
| 1     | XXXX        | Elective-II                | 3+0            | 3      | 0         |
| 2     | XXXXX       | Elective-III               | 3+0            | 3      | 0         |
| 3     | THS 700     | Thesis-I                   | 3+0            | 3      | 0         |
| 4     | MED 717     | Journal Club (Essential)-3 | No credit hour | 0      | 0         |

|                                         |         |                                   |                |           |          |
|-----------------------------------------|---------|-----------------------------------|----------------|-----------|----------|
| 5                                       | MED 720 | Teaching Internship (Essential)-3 | No credit hour | 0         | 0        |
| <b>Total Credit Hours in Semester-3</b> |         |                                   | <b>09</b>      | <b>09</b> | <b>0</b> |

#### SEMESTER -4

| Sr.No.                                  | Course Code | Course Title | Credit Hours | Theory   | Practical |
|-----------------------------------------|-------------|--------------|--------------|----------|-----------|
| 1                                       | THS 701     | Thesis-II    | 3+0          | 3        | 0         |
| <b>Total</b>                            |             |              | <b>3</b>     | <b>3</b> | <b>0</b>  |
| <b>Total Credit Hours in Semester-4</b> |             |              | <b>3</b>     | <b>3</b> | <b>0</b>  |

#### LIST OF ELECTIVE COURSES

| Sr.No. | Course Code | Course Title                            | Credit Hours | Theory | Practical |
|--------|-------------|-----------------------------------------|--------------|--------|-----------|
| 1.     | PHY 762     | Physiology of Health, Fitness& Exercise | 3+0          | 3      | 0         |
| 2.     | PHY 763     | Heme & Immune system                    | 3+0          | 3      | 0         |
| 3.     | PHY 764     | Gastrointestinal Physiology             | 3+0          | 3      | 0         |
| 4.     | PHY 765     | Neurophysiology and special senses      | 3+0          | 3      | 0         |
| 5.     | PHY 766     | Renal Physiology                        | 3+0          | 3      | 0         |
| 6.     | PHY 767     | Endocrine and Reproductive Physiology   | 3+0          | 3      | 0         |
| 7.     | PHY 768     | Electrophysiology                       | 3(1+2)       | 1      | 2         |



## M.PHIL ANATOMY

### **Eligibility criteria of all offered programs by school**

#### **Eligibility Criteria:**

##### **Academic Qualifications**

- 16 years of education with MBBS/BDS from PMDC/HEC recognized university institute with minimum CGPA 2.0/4.0 OR 50% marks where CGPA is not given.
- Completion of one year house job at PMDC recognized institution.
- Valid PMDC/PMC registration certificate.
- HEC attestation on candidate's local degree and cumulative transcript (at the back of original degree & transcript)
- Two years teaching experience in the relevant subject will be given preference.

**NB:** All mentioned certificates duly attested by HEC to be produced at the time of interview otherwise candidate will become ineligible for selection process.

##### **Program Timings and specializations**

- 2 Years
- MPhil-Anatomy

##### **General Objectives of Our Degree Programs:**

- a) To promote faculty development in higher education that will strengthen basic science teaching and research in medical professional institutions including BUMDC
- b) To encourage a culture of critical inquiry for promotion of evidence-based teaching and research
- c) To conduct original research under supervision
- d) To value progress of science on the basis of evidence
- e) To appreciate ethical and moral values
- f) To present the results of research in national and international scientific forums
- g) To publish research results in scientific national and/or international journals

## M. PHIL ANATOMY PROGRAM– ROADMAP

**Semester-I & Semester-II are Pre-requisite to proceed to Semester -III**

### SEMESTER-I

| Sr.No.                                  | Course Code | Course Title                                      | Credit Hours   | Theory   | Practical |
|-----------------------------------------|-------------|---------------------------------------------------|----------------|----------|-----------|
| 1                                       | MED 701     | Research methodology, Biostatistics, Epidemiology | 3+0            | 3        | 0         |
| 2                                       | MED 712     | Medical Biology & Genetics                        | 2+0            | 2        | 0         |
| 3                                       | MED 713     | Medical Education, Ethics & Writing               | 2+0            | 2        | 0         |
| 4                                       | MED 714     | Instruments & Animal use in research              | 2(1+1)         | 1        | 1         |
| 5                                       | MED 715     | Journal Club (Essential)-I                        | No credit hour | 0        | 0         |
| 6                                       | MED 718     | Teaching Internship (Essential)-I                 | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-I</b> |             |                                                   | <b>9</b>       | <b>8</b> | <b>1</b>  |

### SEMESTER-II

| Sr.No.                                   | Course Code | Course Title                       | Credit Hours   | Theory   | Practical |
|------------------------------------------|-------------|------------------------------------|----------------|----------|-----------|
| 1                                        | ANA 730     | Neuro-Anatomy with Head & Neck     | 3(2+1)         | 2        | 1         |
| 2                                        | ANA 731     | GIT with related abnormalities     | 3(2+1)         | 2        | 1         |
| 3                                        | XXX XXX     | Elective-I                         | 3 (2+1)        | 2        | 1         |
| 4                                        | MED 716     | Journal Club (Essential)-II        | No credit hour | 0        | 0         |
| 5                                        | MED 719     | Teaching Internship (Essential)-II | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-II</b> |             |                                    | <b>9</b>       | <b>6</b> | <b>3</b>  |

**SEMESTER-III**

| Sr.No.                                    | Course Code | Course Title                        | Credit Hours   | Theory   | Practical |
|-------------------------------------------|-------------|-------------------------------------|----------------|----------|-----------|
| 1                                         | XXX<br>XXX  | Elective-II                         | 3 (2+1)        | 2        | 1         |
| 2                                         | XXX<br>XXX  | Elective-III                        | 3 (2+1)        | 2        | 1         |
| 3                                         | THS 700     | Thesis-I                            | 3+0            | 3        | 0         |
| 4                                         | MED 717     | Journal Club (Essential)-III        | No credit hour | 0        | 0         |
| 5                                         | MED 720     | Teaching Internship (Essential)-III | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-III</b> |             |                                     | <b>9</b>       | <b>7</b> | <b>2</b>  |

**SEMESTER-IV**

| Sr.No.                                   | Pre-requisite course code | Course Code | Course Title | Credit Hours | Theory   | Practical |
|------------------------------------------|---------------------------|-------------|--------------|--------------|----------|-----------|
| 1                                        | THS 700                   | THS 701     | Thesis-II    | 3+0          | 3        | 0         |
| <b>Total Credit Hours in Semester-IV</b> |                           |             |              | <b>3</b>     | <b>3</b> | <b>0</b>  |

**LIST OF ELECTIVES**

| Sr.No. | Course Code | Course Title                        | Credit Hours | Theory | Practical |
|--------|-------------|-------------------------------------|--------------|--------|-----------|
| 1      | MED 706     | Tissue processing                   | 3(1+2)       | 1      | 2         |
| 2      | MED 708     | Cadaveric dissection                | 3(1+2)       | 1      | 2         |
| 3      | MED 709     | Advanced microscopic techniques     | 3(1+2)       | 1      | 2         |
| 4      | ANA 732     | Microscopic structure of Tissue     | 3(2+1)       | 2      | 1         |
| 5      | ANA 733     | Developmental Anatomy               | 3(2+1)       | 2      | 1         |
| 6      | ANA 734     | Musculoskeletal system              | 3(2+1)       | 2      | 1         |
| 7      | ANA 735     | Cardiovascular & Respiratory system | 3(2+1)       | 2      | 1         |
| 8      | ANA 736     | Urogenital System                   | 3(2+1)       | 2      | 1         |
| 9      | ANA 737     | Reticuloendothelial System          | 3(2+1)       | 2      | 1         |

## MPHIL PATHOLOGY

### Eligibility criteria of all offered programs by school

#### Eligibility Criteria

##### Academic Qualifications

- 16 years of education with MBBS/BDS from PMDC/HEC recognized university institute with minimum CGPA 2.0/4.0 OR 50% marks where CGPA is not given.
- Completion of one year house job at PMDC recognized institution.
- Valid PMDC/PMC registration certificate.
- HEC attestation on candidate's local degree and cumulative transcript (at the back of original degree & transcript)
- Two years teaching experience in the relevant subject will be given preference.

**NB:** All mentioned certificates duly attested by HEC to be produced at the time of interview otherwise candidate will become ineligible for selection process.

##### Program Timings and specializations

- 2 Years
- Pathology(Histopathology, Microbiology)

### Road Maps

#### MPHIL PATHOLOGY PROGRAM – ROADMAP

##### SEMESTER I

| Sr.No. | Course Code | Course Title                         | Credit Hours   | Theory | Practical |
|--------|-------------|--------------------------------------|----------------|--------|-----------|
| 1      | MED 701     | Research Methodology                 | 3+0            | 3      | 0         |
| 2      | MED 712     | Medical Biology & Genetics           | 2+0            | 2      | 0         |
| 3      | MED 713     | Medical Education, Ethics & Writing  | 2+0            | 2      | 0         |
| 4      | MED 714     | Instruments & Animal use in research | 2 (1+1)        | 1      | 1         |
| 5      | MED 715     | Journal Club (Essential)-I           | No credit hour | 0      | 0         |

|                                         |         |                                   |                |          |          |
|-----------------------------------------|---------|-----------------------------------|----------------|----------|----------|
| 6                                       | MED 718 | Teaching Internship (Essential)-I | No credit hour | 0        | 0        |
| <b>Total Credit Hours in Semester-I</b> |         |                                   | <b>9</b>       | <b>8</b> | <b>1</b> |

## SEMESTER-II

| Sr.No.                                   | Course Code               | Course Title                           | Credit Hours   | Theory   | Practical |
|------------------------------------------|---------------------------|----------------------------------------|----------------|----------|-----------|
| 1                                        | PAT 740                   | General Pathology & Basic Microbiology | 3(2+1)         | 2        | 1         |
| 2                                        | PAT 750                   | Special Pathology                      | 3(2+1)         | 2        | 1         |
| 3                                        | PAT 751                   | Microbiology & Mycology                | 3(2+1)         | 2        | 1         |
| 4                                        | XXX<br>XXX/<br>XXX<br>XXX | Elective- I                            | 3(1+2)         | 1        | 2         |
| 5                                        | MED 716                   | Journal Club (Essential)-II            | No credit hour | 0        | 0         |
| 6                                        | MED 719                   | Teaching Internship (Essential)-II     | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-II</b> |                           |                                        | <b>9</b>       | <b>5</b> | <b>4</b>  |

## SEMESTER-III

**Semester-I & Semester-II are Pre-requisite to proceed to Semester -III**

| Sr.No.                                    | Course Code         | Course Title                         | Credit Hours   | Theory   | Practical |
|-------------------------------------------|---------------------|--------------------------------------|----------------|----------|-----------|
| 1                                         | XXX XXX/<br>XXX XXX | Elective-II                          | 3(1+2)         | 1        | 2         |
| 2                                         | XXX XXX/<br>XXX XXX | Elective-III                         | 3(1+2)         | 1        | 2         |
| 3                                         | THS 700             | Thesis-I                             | 3+0            | 3        | 0         |
| 4                                         | MED 717             | Journal Club (Essential)-III         | No credit hour | 0        | 0         |
| 5                                         | MED 720             | Teaching Internship (Essential) -III | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-III</b> |                     |                                      | <b>9</b>       | <b>5</b> | <b>4</b>  |

## SEMESTER-IV

| Sr.No.                                   | Pre-requisite course code | Course Code | Course Title | Credit Hours | Theory | Practical |
|------------------------------------------|---------------------------|-------------|--------------|--------------|--------|-----------|
| 1                                        | THS 700                   | THS 701     | Thesis-II    | 3+0          | 3      | 0         |
| <b>Total Credit Hours in Semester-IV</b> |                           |             |              | 3            | 3      | 3         |

## D. LIST OF ELECTIVES

| PATHOLOGY |             |                                                                |              |        |           |
|-----------|-------------|----------------------------------------------------------------|--------------|--------|-----------|
| S. No     | Course Code | Course Title                                                   | Credit Hours | Theory | Practical |
| 1         | PAT-742     | Tissue processing for histopathology                           | 1+2          | 1      | 2         |
| 2         | PAT-743     | Histopathology laboratory procedures & reporting               | 1+2          | 1      | 2         |
| 3.        | PAT-744     | Endocrine & Renal disorders                                    | 1+2          | 1      | 2         |
| 4         | PAT-745     | Molecular pathology laboratory- related to tissue pathology    | 1+2          | 1      | 2         |
| 5         | PAT-746     | Microbiology laboratory - procedures & reporting               | 1+2          | 1      | 2         |
| 6         | PAT-747     | Molecular pathology laboratory- related to infectious diseases | 1+2          | 1      | 2         |
| 7         | PAT-748     | Virology                                                       | 1+2          | 1      | 2         |
| 8         | PAT-749     | Parasitology                                                   | 1+2          | 1      | 2         |

## MPHIL PHARMACOLOGY

### Eligibility criteria of all offered programs by school

#### Eligibility Criteria

##### Academic Qualifications

- 16 years of education with MBBS/BDS from PMDC/HEC recognized university institute with minimum CGPA 2.0/4.0 OR 50% marks where CGPA is not given.
- Completion of one year house job at PMDC recognized institution.
- Valid PMDC/PMC registration certificate.
- HEC attestation on candidate's local degree and cumulative transcript (at the back of original degree & transcript)
- Two years teaching experience in the relevant subject will be given preference.

**NB:** All mentioned certificates duly attested by HEC to be produced at the time of interview otherwise candidate will become ineligible for selection process.

#### Program Timings and specializations

- 2 Years

#### MPhil-Pharmacology

### MPHIL -PHARMACOLOGY PROGRAM – ROADMAP

#### SEMESTER-I

| Sr.No. | Course Code | Course Title                         | Credit Hours   | Theory | Practical |
|--------|-------------|--------------------------------------|----------------|--------|-----------|
| 1      | MED 701     | Research Methodology                 | 3+0            | 3      | 0         |
| 2      | MED 712     | Medical Biology & Genetics           | 2+0            | 2      | 0         |
| 3      | MED 713     | Medical Education, Ethics & Writing  | 2+0            | 2      | 0         |
| 4      | MED 714     | Instruments & Animal use in research | 2(1+1)         | 1      | 1         |
| 5      | MED 715     | Journal Club (Essential)-I           | No credit hour | 0      | 0         |

|                                         |         |                                   |                |          |          |
|-----------------------------------------|---------|-----------------------------------|----------------|----------|----------|
| 6                                       | MED 718 | Teaching Internship (Essential)-I | No credit hour | 0        | 0        |
| <b>Total Credit Hours in Semester-I</b> |         |                                   | <b>9</b>       | <b>8</b> | <b>1</b> |

## SEMESTER-II

| Sr.No.                                   | Course Code | Course Title                                       | Credit Hours   | Theory   | Practical |
|------------------------------------------|-------------|----------------------------------------------------|----------------|----------|-----------|
| 1                                        | PHM 721     | Pharmacological concepts & Adrenergic Pharmacology | 3(2+1)         | 2        | 1         |
| 2                                        | PHM 722     | Cholinergic & Cardio-Respiratory Pharmacology      | 3+0            | 3        | 0         |
| 3                                        | XXX<br>XXX  | Elective –I                                        | 3+0            | 3        | 0         |
| 4                                        | MED 716     | Journal Club (Essential)-II                        | No credit hour | 0        | 0         |
| 5                                        | MED 719     | Teaching Internship (Essential)-II                 | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-II</b> |             |                                                    | <b>9</b>       | <b>8</b> | <b>1</b>  |

## SEMESTER-III

| Sr.No.                                    | Course Code | Course Title                        | Credit Hours   | Theory   | Practical |
|-------------------------------------------|-------------|-------------------------------------|----------------|----------|-----------|
| 1                                         | XXX<br>XXX  | Elective-II                         | 3+0            | 3        | 0         |
| 2                                         | XXX<br>XXX  | Elective-III                        | 3+0            | 3        | 0         |
| 3                                         | THS 700     | Thesis-I                            | 3+0            | 3        | 0         |
| 4                                         | MED 717     | Journal Club (Essential)-III        | No credit hour | 0        | 0         |
| 5                                         | MED 720     | Teaching Internship (Essential)-III | No credit hour | 0        | 0         |
| <b>Total Credit Hours in Semester-III</b> |             |                                     | <b>9</b>       | <b>9</b> | <b>0</b>  |

**Semester-I & Semester-II are Pre-requisite to proceed to Semester -III**

**SEMESTER-IV**

**E.**

| Sr.No.                                   | Pre-requisite course code | Course Code | Course Title | Credit Hours | Theory   | Practical |
|------------------------------------------|---------------------------|-------------|--------------|--------------|----------|-----------|
| 1                                        | THS 700                   | THS 701     | Thesis-II    | 3+0          | 3        | 0         |
| <b>Total Credit Hours in Semester-IV</b> |                           |             |              | <b>3</b>     | <b>3</b> | <b>0</b>  |

**LIST OF ELECTIVES**  
**PHARMACOLOGY**

| S. No. | Course Code | Course Title                              | Credit Hours | Theory | Practical |
|--------|-------------|-------------------------------------------|--------------|--------|-----------|
| 1      | MED 706     | Tissue Processing                         | 3(2+1)       | 2      | 1         |
| 2      | MED 707     | Drug Bio-screening & Herbal Medications   | 3(2+1)       | 2      | 1         |
| 3      | PHM 723     | Neuropharmacology                         | 3+0          | 3      | 0         |
| 4      | PHM 724     | Endocrine & Gastrointestinal Pharmacology | 3+0          | 3      | 0         |
| 5      | PHM 725     | Chemotherapy                              | 3+0          | 3      | 0         |
| 6      | PHM 726     | Toxicology                                | 3+0          | 3      | 0         |
| 7      | PHM 727     | Pharmacogenetics                          | 3+0          | 3      | 0         |
| 8      | PHM 728     | Autacoids & Analgesics                    | 3+0          | 3      | 0         |

## DPT – DOCTOR IN PHYSICAL THERAPY

### Eligibility Criteria

FSc (Pre-Medical) with at least 60% marks or equivalent.

### DPT - ROAD MAP

| Semester-1 |             |                                                       |                       |
|------------|-------------|-------------------------------------------------------|-----------------------|
| S.#        | Course Code | Course Title                                          | Credit Hours          |
| 1          | ANT 101     | ANATOMY –I (Theory)<br>ANATOMY –I (Practical)         | 4(3-1)                |
| 2          | PHY 102     | PHYSIOLOGY-I (Theory)<br>PHYSIOLOGY-I (Practical)     | 3(2-1)                |
| 3          | KNS 103     | KINESIOLOGY-I (Theory)<br>KINESIOLOGY-I (Practical)   | 3(2-1)                |
| 4          | ENG 116     | ENGLISH-I (FUNCTIONAL ENGLISH)                        | 3(3-0)                |
| 5          | PAK 101     | PAKISTAN STUDIES                                      | 2(2-0)                |
| 6          | ITC 106     | INTRODUCTION TO COMPUTER                              | 3(2-1)                |
| 7          | ISL 107     | TAJWEED                                               | Non CH<br>1 hour/week |
|            |             | <b>Credit Hours</b>                                   | <b>18</b>             |
| Semester-2 |             |                                                       |                       |
| S.#        | Course Code | Course Title                                          | Credit Hours          |
| 1          | ANT 107     | ANATOMY –II (Theory)<br>ANATOMY –II (Practical)       | 4(3-1)                |
| 2          | PHY 108     | PHYSIOLOGY-II (Theory)<br>PHYSIOLOGY-II (Practical)   | 3(2-1)                |
| 3          | KNS 109     | KINESIOLOGY-II (Theory)<br>KINESIOLOGY-II (Practical) | 3(2-1)                |
| 4          | ENG 118     | ENGLISH-II (COMMUNICATION SKILLS)                     | 3(3-0)                |
| 5          | ISL 101     | ISLAMIC STUDIES / ETHICS                              | 2(2-0)                |

| 6                 | SOC 112            | SOCIOLOGY                                               | 2(2-0)                   |
|-------------------|--------------------|---------------------------------------------------------|--------------------------|
| 7                 | Code request ed    | CIVIL SOCIETY AND DEVELOPMENT                           | 2(2-0)                   |
| 8                 | ISL 108            | UNDERSTANDING QURAN-I                                   | Non CH<br>1<br>Hour/Week |
|                   |                    | <b>Credit Hours</b>                                     | <b>19</b>                |
| <b>Semester-3</b> |                    |                                                         |                          |
| <b>S.#</b>        | <b>Course Code</b> | <b>Course Title</b>                                     | <b>Credit Hours</b>      |
| 1                 | ENG 122            | ENGLISH-III (Technical Writing & Presentation Skills)   | 3(3-0)                   |
| 2                 | MEP 202            | MEDICAL PHYSICS (Theory)<br>MEDICAL PHYSICS (Practical) | 3(2-1)                   |
| 3                 | ANT 203            | ANATOMY –III (Theory)<br>ANATOMY –III (Practical)       | 3(2-1)                   |
| 4                 | PHY 204            | PHYSIOLOGY-III (Theory)<br>PHYSIOLOGY-III (Practical)   | 3(2-1)                   |
| 5                 | BIE 205            | BIOMECHANICS & ERGONOMICS-I                             | 3(3-0)                   |
| 6                 | BST 305            | BIOSTATISTICS I                                         | 3(3-0)                   |
| 7                 | Code request       | ENTREPRENEURSHIP                                        | 2(2-0)                   |
| 8                 | ISL 109            | UNDERSTANDING QURAN-II                                  | NON CH<br>1<br>Hour/Week |
|                   |                    | <b>Credit Hours</b>                                     | <b>20</b>                |

| Semester-4 |             |                                                                                               |                       |
|------------|-------------|-----------------------------------------------------------------------------------------------|-----------------------|
| S.#        | Course Code | Course Title                                                                                  | Credit Hours          |
| 1          | ANT 207     | ANATOMY-IV (Neuro Anatomy) (Theory)<br>ANATOMY-IV (Neuro Anatomy) (Practical)                 | 3(2-1)                |
| 2          | BIE 208     | BIOMECHANICS & ERGONOMICS-II                                                                  | 3(2-1)                |
| 3          | HEW 209     | HEALTH & WELLNESS                                                                             | 2(2-0)                |
| 4          | BST 311     | BIOSTATISTICS II (university optional)                                                        | 3(3-0)                |
| 5          | EPY 212     | EXERCISE PHYSIOLOGY (Theory)<br>EXERCISE PHYSIOLOGY (Practical)                               | 3(2-1)                |
| 6          | MBG 212     | MOLECULAR BIOLOGY & GENETICS                                                                  | 2(2-0)                |
| 7          | PPL 505     | PROFESSIONAL PRACTICE (LAWS ,<br>ETHICS & ADMINISTRATION)                                     | 2(2-0)                |
| 8          | ISL 110     | UNDERSTANDING QURAN-III                                                                       | NON CH 1<br>HOUR/WEEK |
|            |             | <b>Credit Hours</b>                                                                           | <b>18</b>             |
| Semester-5 |             |                                                                                               |                       |
| S.#        | Course Code | Course Title                                                                                  | Credit Hours          |
| 1          | PAM 301     | PATHOLOGY & MICROBIOLOGY I                                                                    | 2(2-0)                |
| 2          | PHT 302     | PHARMACOLOGY & THERAPEUTICS I                                                                 | 2(2-0)                |
| 3          | PAE 303     | PHYSICAL AGENTS & ELECTROTHERAPY I (Theory)<br>PHYSICAL AGENTS & ELECTROTHERAPY I (Practical) | 3(2-1)                |

|   |                                         |                                                         |                           |
|---|-----------------------------------------|---------------------------------------------------------|---------------------------|
| 4 | BIO 210                                 | BIOCHEMISTRY II (Theory)<br>BIOCHEMISTRY II (Practical) | 3(2-1)                    |
| 5 | CMR 312                                 | COMMUNITY MEDICINE &<br>REHABILITATION                  | 3(3-0)                    |
| 6 | SCP 313                                 | SUPERVISED CLINICAL PRACTICE II<br>(Practical)          | 3(0-3)                    |
| 7 | ISL 112<br>Underst<br>anding<br>Quran-v | UNDERSTANDING QURAN-V                                   | NON CH 1<br>HOUR/WEE<br>K |
|   |                                         | <b>Credit Hours</b>                                     | <b>17</b>                 |

| Semester-7 |             |                                                                                                 |                       |
|------------|-------------|-------------------------------------------------------------------------------------------------|-----------------------|
| S.#        | Course Code | Course Title                                                                                    | Credit Hours          |
| 1          | MED 401     | MEDICINE I                                                                                      | 3(3-0)                |
| 2          | SUG 402     | SURGERY I                                                                                       | 3(3-0)                |
| 3          | RDI 403     | RADIOLOGY & DIAGNOSTIC IMAGING<br>(Theory)<br>RADIOLOGY & DIAGNOSTIC IMAGING<br>(Practical)     | 3(2-1)                |
| 4          | MPT 404     | MUSCULOSKELETAL PHYSICAL<br>THERAPY (Theory)<br>MUSCULOSKELETAL PHYSICAL<br>THERAPY (Practical) | 3(2-1)                |
| 5          | EBP 405     | EVIDENCE BASED PRACTICE (Theory)<br>EVIDENCE BASED PRACTICE<br>(Practical)                      | 3(2-1)                |
| 6          | SCP 406     | SUPERVISED CLINICAL PRACTICE III<br>(Practical)                                                 | 3(0-3)                |
| 7          | ISL 113     | SEERAH- I                                                                                       | NON CH 1<br>HOUR/WEEK |
|            |             | <b>Credit Hours</b>                                                                             | <b>18</b>             |

| Semester-8 |             |                                                                                                                                         |                    |
|------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| S.#        | Course Code | Course Title                                                                                                                            | Credit Hours       |
| 1          | MED 407     | MEDICINE II                                                                                                                             | 3(3-0)             |
| 2          | SUG 408     | SURGERY II                                                                                                                              | 3(3-0)             |
| 3          | NPT 409     | NEUROLOGICAL PHYSICAL THERAPY (Theory)<br>NEUROLOGICAL PHYSICAL THERAPY (Practical)                                                     | 3(2-1)             |
| 4          | SRM 410     | SCIENTIFIC INQUIRY & RESEARCH METHODOLOGY (Theory)<br>SCIENTIFIC INQUIRY & RESEARCH METHODOLOGY (Practical)                             | 3(2-1)             |
| 5          | EPT 411     | EMERGENCY PROCEDURES & PRIMARY CARE IN PHYSICAL THERAPY (Theory)<br>EMERGENCY PROCEDURES & PRIMARY CARE IN PHYSICAL THERAPY (Practical) | 3(2-1)             |
| 6          | SCP 412     | SUPERVISED CLINICAL PRACTICE IV (Practical)                                                                                             | 3(0-3)             |
| 7          | ISL 114     | SEERAH -II                                                                                                                              | NON CH 1 HOUR/WEEK |
|            |             | <b>Credit Hours</b>                                                                                                                     | <b>18</b>          |
| Semester-9 |             |                                                                                                                                         |                    |
| S.#        | Course Code | Course Title                                                                                                                            | Credit Hours       |
| 1          | CPT 501     | CARDIOPULMONARY PHYSICAL THERAPY (Theory)<br>CARDIOPULMONARY PHYSICAL THERAPY (Practical)                                               | 3(2-1)             |

| 2                  | PRO 502            | PROSTHETICS & ORTHOTICS                               | 2(2-0)              |
|--------------------|--------------------|-------------------------------------------------------|---------------------|
| 3                  | CDD 503            | CLINICAL DECISION MAKING & DIFFERENTIAL DIAGNOSIS     | 3(3-0)              |
| 4                  | MAT 504            | MANUAL THERAPY (Theory)<br>MANUAL THERAPY (Practical) | 3(2-1)              |
| 5                  | IPT 506            | INTEGUMENTRY PHYSICAL THERAPY (Theory)                | 2(2-0)              |
| 6                  | Code requested     | SUPERVISED CLINICAL PRACTICE V (Practical)            | 4(0-4)              |
|                    |                    | <b>Credit Hours</b>                                   | <b>17</b>           |
| <b>Semester-10</b> |                    |                                                       |                     |
| <b>S.#</b>         | <b>Course Code</b> | <b>Course Title</b>                                   | <b>Credit Hours</b> |
| 1                  | OGT 508            | OBSTETRICS & GYNAECOLOGICAL PHYSICAL THERAPY          | 2(2-0)              |
| 2                  | PET 509            | PAEDIATRIC PHYSICAL THERAPY                           | 2(2-0)              |
| 3                  | GGT 510            | GERONTOLOGY & GERIATRIC PHYSICAL THERAPY              | 2(2-0)              |
| 4                  | SPT 511            | SPORTS PHYSICAL THERAPY                               | 2(2-0)              |
| 5                  | SCP 512            | SUPERVISED CLINICAL PRACTICE VI (Practical)           | 4(0-4)              |
| 6                  | REP 513            | RESEARCH PROJECT                                      | 6                   |
|                    |                    | <b>Credit Hours</b>                                   | <b>18</b>           |
|                    |                    | <b>TOTAL CREDIT HOURS</b>                             | <b>180</b>          |
|                    |                    | <b>Total theory/Lectures for Ten Semesters</b>        | <b>134</b>          |
|                    |                    | <b>Total Practical Hours for Ten Semesters</b>        | <b>46</b>           |

## BS NURSING

### Eligibility Criteria

FSc (Pre-Medical) with 50% marks minimum (Physics, Chemistry & Biology as compulsory subjects) are eligible to apply and appear In entrance test which will be conducted by Bahria University on particular time and date.

Age Limit: 16-35 years

Open Merit

### BS Nursing - ROAD MAP

#### Semester-1

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title             | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|-----------------------------------------|---------------------------|-------------|--------------------------|--------------------|--------|----------|-------------|
| 1                                       | –                         | FON101      | Fundamental of Nursing-I | 4                  | 2      | –        | 2           |
| 2                                       | –                         | MIC 102     | Microbiology             | 3                  | 2.5    | –        | 0.5         |
| 3                                       | –                         | ANP 103     | Anatomy and Physiology-I | 3                  | 3      | –        | –           |
| 4                                       | –                         | BIO 104     | Biochemistry for Nurses  | 3                  | 2      | –        | 1           |
| 5                                       | –                         | ENG 103     | English-I                | 2                  | 2      | –        | –           |
| 6                                       | –                         | COS 106     | Computer Skills          | 1                  | 1      | –        | 1           |
| <b>Total Credit Hours in Semester-1</b> |                           |             |                          | 16                 | 11.5   | –        | 4.5         |

## Semester-2

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title               | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|-----------------------------------------|---------------------------|-------------|----------------------------|--------------------|--------|----------|-------------|
| 1                                       | FON 101                   | FON 107     | Fundamental of Nursing-II  | 4                  | 2      | 1        | 1           |
| 2                                       | ANP 103                   | ANP 108     | Anatomy and Physiology-II  | 3                  | –      | –        | –           |
| 3                                       | –                         | CHN 109     | Community Health Nursing-I | 3                  | 2      | 1        |             |
| 4                                       | –                         | APP 110     | Applied Nutrition          | 1                  | 1      | –        | –           |
| 5                                       | ENG 103                   | ENG 104     | English-II                 | 2                  | 2      | –        | –           |
| 6                                       | –                         | ISL 101     | Islamic Studies            | 2                  | 2      | –        | –           |
| 7                                       |                           | PAK 101     | Pakistan Studies           | 2                  | 2      | –        | –           |
| <b>Total Credit Hours in Semester-2</b> |                           |             |                            | 17                 | 11     | 2        | 1           |

## Semester-3

| Sr.No. | Pre-requisite course code | Course Code | Course Title           | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|--------|---------------------------|-------------|------------------------|--------------------|--------|----------|-------------|
| 1      | –                         | AHN 201     | Adult Health nursing-I | 8                  | 4      | 3        | 1           |
| 2      | –                         | PTH 202     | Pathophysiology-I      | 2                  | 1.75   | –        | 0.25        |

|                                         |         |         |                     |    |       |   |      |
|-----------------------------------------|---------|---------|---------------------|----|-------|---|------|
| 3                                       | –       | HEA 203 | Health Assessment-I | 2  | 1     | – | 1    |
| 4                                       | –       | PHR 204 | Pharmacology-I      | 2  | 2     | – | –    |
| 5                                       | –       | MAT 205 | Mathematics         | 1  | 1     | – | –    |
| 6                                       | ENG 104 | ENG 112 | English-III         | 2  | 2     | – | –    |
| <b>Total Credit Hours in Semester-3</b> |         |         |                     | 17 | 11.75 | 3 | 2.25 |

### Semester-4

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title             | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|-----------------------------------------|---------------------------|-------------|--------------------------|--------------------|--------|----------|-------------|
| 1                                       | AHN 201                   | AHN 207     | Adult Health nursing-II  | 8                  | 4      | 3        | 1           |
| 2                                       | PTH 202                   | PTH 208     | Pathophysiology-II       | 3                  | 2.75   | –        | 0.25        |
| 3                                       | HEA 203                   | HEA 209     | Health Assessment-II     | 2                  | 1      | –        | 1           |
| 4                                       | –                         | DVP 210     | Developmental psychology | 2                  | 2      | –        | –           |
| 5                                       | PHR 204                   | PHR 211     | Pharmacology-II          | 2                  | 2      | –        | –           |
| 6                                       | ENG 112                   | ENG 212     | English-IV               | 2                  | 2      | –        | –           |
| 7                                       | –                         | NRE 213     | Nursing Ethics           | 1                  | 1      | –        | –           |
| <b>Total Credit Hours in Semester-4</b> |                           |             |                          | 20                 | 14.75  | 3        | 2.25        |

### Semester-5

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title                              | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|-----------------------------------------|---------------------------|-------------|-------------------------------------------|--------------------|--------|----------|-------------|
| 1                                       | –                         | PHN 301     | Paediatric Health Nursing                 | 7                  | 3      | 3        | 1           |
| 2                                       | CHN 109                   | CHN 302     | Community Health Nursing                  | 6                  | 2.5    | 2.5      | 1           |
| 3                                       | –                         | TEL 303     | Teaching/ Learning: Principles/ Practices | 3                  | 3      | –        | –           |
| 4                                       | ENG 212                   | ENG 304     | English V                                 | 2                  | 2      | –        | –           |
| <b>Total Credit Hours in Semester-5</b> |                           |             |                                           | 18                 | 10.5   | 5.5      | 2           |

## Semester-6

| Sr.No. | Pre-requisite course code | Course Code | Course Title                  | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|--------|---------------------------|-------------|-------------------------------|--------------------|--------|----------|-------------|
| 1      | –                         | MHN 305     | Mental Health Nursing         | 6                  | 3      | 3        | –           |
| 2      | –                         | INB 306     | Introduction to Biostatistics | 3                  | 2.5    | –        | 0.5         |
| 3      | –                         | BHP 307     | Behavioral psychology         | 3                  | 3      | –        | –           |
| 4      | –                         | EPI 308     | Epidemiology                  | 2                  | 2      | –        | –           |
| 5      | ENG 304                   | ENG 315     | English-VI                    | 2                  | 2      | –        | –           |
| 6      | –                         | CHS 210     | Culture, Health and Society   | 2                  | 2      | –        | –           |



|                                         |    |      |   |     |
|-----------------------------------------|----|------|---|-----|
| <b>Total Credit Hours in Semester-6</b> | 18 | 14.5 | 3 | 0.5 |
|-----------------------------------------|----|------|---|-----|

### Semester-7

| Sr.No.                                  | Pre-requisite course code | Course Code | Course Title                         | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|-----------------------------------------|---------------------------|-------------|--------------------------------------|--------------------|--------|----------|-------------|
| 1                                       | –                         | CCN 401     | Critical Care Nursing                | 7                  | 2.5    | 4        | 0.50        |
| 2                                       | –                         | INT 402     | Introduction to Nursing Theories     | 2                  | 2      | –        | –           |
| 3                                       | –                         | LIV 403     | Leadership and Management in Nursing | 3                  | 2      | 1        | –           |
| 4                                       | –                         | NUR 404     | Nursing Research                     | 3                  | 3      | –        | –           |
| 5                                       | ENG 315                   | ENG 415     | English VII                          | 2                  | 2      | –        | –           |
| <b>Total Credit Hours in Semester-7</b> |                           |             |                                      | 17                 | 11.5   | 5        | 0.50        |

### Semester-8

| Sr.No. | Pre-requisite course code | Course Code | Course Title                 | Total Credit Hours | Theory | Clinical | Skills/ Lab |
|--------|---------------------------|-------------|------------------------------|--------------------|--------|----------|-------------|
| 1      | CHN 109,302               | CHN 406     | Community Health Nursing-III | 5                  | 2      | 3        | –           |



|                                         |         |         |                                 |    |   |   |   |
|-----------------------------------------|---------|---------|---------------------------------|----|---|---|---|
| 2                                       | –       | NST 407 | Nursing Seminar/Role Transition | 2  | 2 | – | – |
| 3                                       | –       | CLP 408 | Clinical Practicum              | 5  | – | 4 | 1 |
| 4                                       | ENG 415 | ENG 416 | English-VIII                    | 2  | 2 | – | – |
| <b>Total Credit Hours in Semester-8</b> |         |         |                                 | 14 | 6 | 7 | 1 |

## Eligibility Criteria

FSc (Pre-Medical) with at least 50% marks or equivalent.

## BS Medical Laboratory Technology

### BS MLT - Road Map

|                                |                                                                                                                                                               |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Course title                   | BS (4 year degree program) in Medical Technology<br>Offered in<br><br>Clinical Laboratory Science/Clinical Pathology/Clinical Chemistry/ Medical Biochemistry |
| Course duration                | 4 YEARS                                                                                                                                                       |
| Study system                   | SEMESTER SYSTEM                                                                                                                                               |
| No. of regular semesters       | 8                                                                                                                                                             |
| Semester Duration              | 16- 18 weeks                                                                                                                                                  |
| Total credit hours             | 130 (HEC recommended: 124-136)                                                                                                                                |
| Number of courses per semester | 4-6                                                                                                                                                           |
| Course Load per Semester       | 15-18 credit hr                                                                                                                                               |
| Course Title with study hrs    | See table 1& II                                                                                                                                               |
| Campus                         | Health Sciences Campus Karachi                                                                                                                                |
| Eligible Criteria              | 50% marks or above in Intermediate Science (Preferably Pre-Medical) or equivalent examination.                                                                |
| Program Timing                 | Morning                                                                                                                                                       |

### Details with title of courses

| Year | Semester | Course Codes | Title of Course | Credit hrs |
|------|----------|--------------|-----------------|------------|
|------|----------|--------------|-----------------|------------|

|                                |     |         |                                |       |
|--------------------------------|-----|---------|--------------------------------|-------|
| <b>1<sup>st</sup><br/>year</b> | I   | MBC 101 | Medical Biochemistry -I        | 3 + 1 |
|                                |     | HPH 102 | Human Physiology-I             | 3 + 1 |
|                                |     | HAT 103 | Human Anatomy-I                | 3 + 1 |
|                                |     | ENG 104 | English -I                     | 2 + 0 |
|                                |     | PKS 105 | Pakistan Studies               | 2 + 0 |
|                                |     | CSK 106 | Computer Skills                | 1+ 1  |
|                                | II  | MBC 107 | Medical Biochemistry -II       | 3 + 1 |
|                                |     | HPH 108 | Human Physiology-II            | 3 + 1 |
|                                |     | HAT 109 | Human Anatomy -II              | 2 + 1 |
|                                |     | ENG 110 | General Pathology-I            | 2 + 1 |
|                                |     | GPT 111 | English -II                    | 2 + 0 |
|                                |     | IST 112 | Islamic Studies                | 2 + 0 |
| <b>2<sup>nd</sup><br/>year</b> | III | GPH 201 | General Pharmacology-I         | 2+ 1  |
|                                |     | HMT 202 | Hematology – I                 | 2+ 1  |
|                                |     | HGN 203 | Human Genetics                 | 2+ 1  |
|                                |     | DMB 204 | Diagnostic Microbiology-I      | 2+ 1  |
|                                |     | GPT 205 | General Pathology-II           | 2+ 1  |
|                                | IV  | GPH 206 | General Pharmacology-II        | 2+ 1  |
|                                |     | DMB 207 | Diagnostic Microbiology-II     | 2+ 1  |
|                                |     | HMT 208 | Hematology -II                 | 2+ 1  |
|                                |     | CPT 209 | Chemical Pathology             | 2+ 1  |
|                                |     | CVM 210 | Clinical Virology and Mycology | 2+ 1  |
|                                |     | BSC 211 | Behavioral Sciences            | 2+ 0  |



|                                |    |         |                                    |     |
|--------------------------------|----|---------|------------------------------------|-----|
| <b>3<sup>rd</sup><br/>year</b> | V  | WPD 301 | WBCS and Platelets Disorders       | 2+1 |
|                                |    | HPT 302 | Histopathology                     | 2+1 |
|                                |    | CPS 30  | Clinical Parasitology              | 2+1 |
|                                |    | CPT 304 | Clinical Pathology                 | 2+1 |
|                                |    | BTC 305 | Biotechnology                      | 2+1 |
|                                | VI | MLI 306 | Medical Laboratory Instrumentation | 2+1 |
|                                |    | BSS 307 | Biostatistics                      | 2+1 |
|                                |    | IAS 308 | Immunology and serology            | 2+1 |
|                                |    | RMT 309 | Research Methodology               | 2+1 |
|                                |    | BLB 310 | Blood Banking                      | 2+1 |

|                                |      |          |                                      |      |
|--------------------------------|------|----------|--------------------------------------|------|
| <b>4<sup>th</sup><br/>year</b> | VII  | MLM 401  | Medical Laboratory Management Skills | 2+1  |
|                                |      | FIC 4032 | Fundamental of infection control     | 2+1  |
|                                |      | MCB 403  | Molecular Biology                    | 2 +1 |
|                                |      | EPD 404  | Epidemiology                         | 2 +0 |
|                                |      | SDB 405  | Systematic Diagnostic Bacteriology   | 2 +1 |
|                                |      | CAC 406  | Cytology and Cytogenetics            | 2 +1 |
|                                | VIII | RPT 407  | Research Project                     | 6    |
|                                |      | SMR 408  | Seminar                              | 1+0  |
|                                |      | MSC 409  | Medical Sociology                    | 2 +1 |
|                                |      | BIN 410  | Bioinformatics                       | 1+1  |
| -                              |      | CSK 411  | Communication Skills                 | 2+1  |



## BS (BIO TECHNOLOGY)

**Campus:** BUHS

**Duration:** 4 Years (8 Semesters)

**Program Timing:** Morning

**Eligibility Criteria:** Candidates having 50% marks or above in Intermediate Science or equivalent examination are eligible to apply.

### Road Map

#### Semester 1

| S. No | Course  | Name of Subject                       | Credits |
|-------|---------|---------------------------------------|---------|
| 1     | ENG 116 | English-I                             | 3+0     |
| 2     | PAK 101 | Pakistan Studies                      | 2+0     |
| 3     | MAS 102 | Mathematics-I (pre-calculus)          | 3+0     |
| 4     | EBE 103 | Ecology, Biodiversity & Evolution – I | 3+0     |
| 5     | OCH 104 | Organic Chemistry                     | 2+1     |
| 6     | CBI 105 | Cell Biology                          | 2+1     |

#### Semester 2

| S. No | Course  | Name of Subject                        | Credits |
|-------|---------|----------------------------------------|---------|
| 1     | ENG 118 | English-II                             | 3+0     |
| 2     | ISL 103 | Islamic Studies/Ethics                 | 2+0     |
| 3     | BMA 106 | Biomathematics                         | 3+0     |
| 4     | ICH 107 | Inorganic Chemistry                    | 2+1     |
| 5     | OCH 108 | Ecology, Biodiversity & Evolution – II | 2+1     |
| 6     | MIC 102 | Microbiology                           | 2+1     |

### Semester 3

| S. No | Course  | Name of Subject                  | Credits |
|-------|---------|----------------------------------|---------|
| 1     | ENG 122 | English-III                      | 3+0     |
| 2     | CSC 107 | Introduction to Computer Science | 2+1     |
| 3     | PHC 111 | Physical Chemistry               | 3+0     |
| 4     | BSC 103 | Behavioral Science               | 3+0     |
| 5     | BIO 112 | Biochemistry-I                   | 2+1     |
| 6     | CGE 114 | Classical Genetics               | 3+0     |

### Semester 4

| S. No | Course  | Name of Subject                        | Credits |
|-------|---------|----------------------------------------|---------|
| 1     | BPH 207 | Biological Physics                     | 3+0     |
| 2     | PBI 208 | Probability & Biostatistics            | 3+0     |
| 3     | SOC 209 | Sociology                              | 3+0     |
| 4     | ACI 210 | Analytical Chemistry & Instrumentation | 2+1     |
| 5     | BIO 210 | Biochemistry-II                        | 2+1     |
| 6     | MBI 206 | Basics of Molecular Biology            | 3+0     |

### Semester 5

| S. No | Course  | Name of Subject                       | Credits |
|-------|---------|---------------------------------------|---------|
| 1     | BIT 301 | Introduction to Biotechnology         | 3+0     |
| 2     | IMM 302 | Immunology                            | 3+0*    |
| 3     | MMB 303 | Methods in Molecular Biology          | 1+2     |
| 4     | PBE 304 | Principles of Biochemical Engineering | 2+1     |
| 5     | BIN 305 | Bioinformatics                        | 1+2     |

## Semester 6

| S. No | Course  | Name of Subject                                                                           | Credits |
|-------|---------|-------------------------------------------------------------------------------------------|---------|
| 1     | GRC 306 | Genetic Resources & Conservation                                                          | 3+0     |
| 2     | MBT 307 | Microbial Biotechnology                                                                   | 3+0*    |
| 3     | AGB 308 | Agriculture Biotechnology                                                                 | 2+1     |
| 4     | FBT 309 | Food Biotechnology                                                                        | 3+0*    |
| 5     |         | Elective I*<br>Virology<br>Cell and tissue culture<br>Molecular diagnostics<br>Biosensors | 3+0     |
| 6     | RMS 311 | Research Methodology & Skill Enhancement                                                  | 3+0     |

## Semester 7

| S. No | Course  | Name of Subject           | Credits |
|-------|---------|---------------------------|---------|
| 1     | HBT 405 | Health Biotechnology      | 3+0*    |
| 2     | SMR 409 | Seminar-I                 | 1+0     |
| 3     | EMB 403 | Environment Biotechnology | 3+0*    |
| 4     | GPR 404 | Genomics and Proteomics   | 3+0     |
| 5     |         | Elective II*              | 3+0     |
| 6     | RPT 407 | Research Project I        | 3+0     |

## Semester 8

| S. No | Course  | Name of Subject                      | Credits |
|-------|---------|--------------------------------------|---------|
| 1     |         | Elective III*                        | 3+0     |
| 2     |         | Elective-IV*                         | 3+0     |
| 3     | SEM 410 | Seminar-II                           | 1+0     |
| 4     | IMB 404 | Industrial Biotechnology             | 3+0     |
| 5     | RPT 408 | Research Project II                  | 3+0     |
| 6     | BET 406 | Biosafety & Bioethics                | 2+0     |
| 7     | INT 407 | Internship ( 9 weeks non credit hrs) | 0       |

### \*LIST OF ELECTIVES:

| Elective I (any one)                     |                                                                                                             |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| VIR 310<br>CTC 311<br>MOD 312<br>BIS 313 | Virology<br>Cell and tissue culture<br>Molecular diagnostics<br>Biosensors                                  |
| Elective II (any one)                    |                                                                                                             |
| WWT 401<br>HWM 402<br>RAB 403<br>BFB 404 | Water and waste water treatment<br>Hospital waste management<br>Radiobiology<br>Biofuels and bio refineries |
| Elective III (any one)                   |                                                                                                             |
| MBT 410<br>ABT 411<br>FBT 412            | Marine biotechnology<br>Animal biotechnology<br>Fungal biotechnology                                        |
| Elective IV (any one)                    |                                                                                                             |
| PBT 413<br>NBT 414<br>FBT 415            | Pharmaceutical biotechnology<br>Nano biotechnology<br>Fermentation biotechnology                            |



## Ph.D. Health Sciences (4 Years)

**Campus:** BUHS

**Duration:** 3 Years (6 Semesters)

**Program Timing:** Evening

### Eligibility Criteria of Ph.D. Health Sciences

1. MBBS / BDS having 17.5/18 years of education with MPhil / FCPS/ equivalent degree from PM&DC and HEC-recognized university with a minimum CGPA of 3.00/4.00 (semester system) or 60% marks (only where CGPA is not given/available) in the field of Anatomy, Physiology, Biochemistry, Pathology (Microbiology), Pathology (Histopathology), Pharmacology and Public health (MS / MPhil / MSPH/ MPH, with course work & thesis).
2. Non-medical MPhil candidates are eligible to apply in PhD Health Sciences – Biochemistry, Physiology & Pathology (Microbiology) programs.
3. Non-medical MS/ MPhil/ MSPH/ MPH candidates with course work & thesis in nursing, social sciences, behavioral sciences are eligible to apply in PhD Health Sciences program – Public Health.
4. The only exception to the 17.5/18 years of education rule shall be a letter from the HEC authorizing a candidate with less than 17.5/18 years of education in unambiguous terms for admission into a PhD program.
5. Completion of one year of house job from PM&DC recognized institution / Hospital.
6. Valid PM&DC registration certificate.
7. Two years teaching experience in respective field will be given preference.
8. All mentioned certificates and degrees duly attested by HEC to be produced at the time of interview to avoid ineligibility.
9. Attestation by HEC on the candidate's local degrees and cumulative transcript (on the back of the original degrees and transcript). HEC's equivalency certificate is required for the candidate's foreign degrees.
10. Aptitude Test NTS-GAT (Subject Test), or GRE (Subject Test), passed with minimum 60% marks, or BU Admission Test (70% passing marks). Result be submitted at the time of application.

## Semester -1

| Sr.No.             | Course Code | Course Title                       | Credit hours   | Theory | Practical |
|--------------------|-------------|------------------------------------|----------------|--------|-----------|
| 1                  | MED 801     | Laboratory Research Techniques     | 3(2+1)         | 2      | 1         |
| 2                  | MED 802     | Biostatistics and Epidemiology     | 3+0            | 3      | 0         |
| 3                  | MED 803     | Health Policy and Systems Research | 3+0            | 3      | 0         |
| 4                  | XXXXXXX     | Elective-I                         | 3+0            | 3      | 0         |
| 5                  | MED 804     | Journal Club -I                    | No credit hour | 0      | 0         |
| 6                  | MED 806     | Teaching Internship-I              | No credit hour | 0      | 0         |
| Total Credit Hours |             |                                    | 9              |        |           |

## \* Student will choose any two out of three MED Courses Semester -2

| Sr.No.             | Course Code | Course Title           | Credit hours   | Theory | Practical |
|--------------------|-------------|------------------------|----------------|--------|-----------|
| 7                  | XXXXXXX     | Elective-II            | 3+0            | 3      | 0         |
| 8                  | XXXXXXX     | Elective-III           | 3+0            | 3      | 0         |
| 9                  | XXXXXXX     | Elective-IV            | 3+0            | 3      | 0         |
| 10                 | MED 805     | Journal Club -II       | No credit hour | 0      | 0         |
| 11                 | MED 807     | Teaching Internship-II | No credit hour | 0      | 0         |
| Total Credit Hours |             |                        | 9              |        |           |



## COMPREHENSIVE EXAM

### Semester -3

| Sr.No. | Course Code | Course Title     | Credit hours |
|--------|-------------|------------------|--------------|
| 12     | THS 900     | PhD Dissertation | 9            |

### Semester -4

| Sr.No. | Course Code | Course Title     | Credit hours |
|--------|-------------|------------------|--------------|
| 13     | THS 900     | PhD Dissertation | 9            |

### Semester -5

| Sr.No. | Course Code | Course Title     | Credit hours |
|--------|-------------|------------------|--------------|
| 14     | THS 900     | PhD Dissertation | 9            |

### Semester -6

| Sr.No. | Course Code | Course Title     | Credit hours |
|--------|-------------|------------------|--------------|
| 15     | THS 900     | PhD Dissertation | 9            |

## MED CORE COURSE LIST

| Sr.No. | Course Code | Course Title                   | Credit hours | Theory | Practical |
|--------|-------------|--------------------------------|--------------|--------|-----------|
| 1      | MED 801     | Laboratory Research Techniques | 3(2+1)       | 2      | 1         |
| 2      | MED 802     | Biostatistics and Epidemiology | 3+0          | 3      | 0         |



|   |         |                                    |     |   |   |
|---|---------|------------------------------------|-----|---|---|
| 3 | MED 803 | Health Policy and Systems Research | 3+0 | 3 | 0 |
|---|---------|------------------------------------|-----|---|---|

**\* Student will choose any two out of three MED Courses**

## ADMISSION CRITERIA

### **UG Programs:**

<https://www.bahria.edu.pk/admission/undergraduate/academic-eligibility-ug/>

### **PG Programs:**

<https://www.bahria.edu.pk/admission/postgraduate/academic-eligibility-pg/>

### **PhD Programs:**

<https://www.bahria.edu.pk/admission/postgraduate/academic-eligibility-doctorate/>



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