MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY
JAMSHORO

Engineering for a Better Tomorrow

POSTGRADUATE PROSPECTUS

ADVANCED LEARNING | RESEARCH | INNOVATION

SESSION 2026-27
(BATCH-27)



POSTGRADUATE PROGRAMS

- ENGINEERING & TECHNOLOGY
- COMPUTER SCIENCE & IT
- BUSINESS & MANAGEMENT
- BASIC SCIENCES & OTHERS

YOUR POTENTIAL | OUR MISSION

Pursue Higher Goals

Acknowledgment

We are thankful to stakeholders for their involvement in the preparation of this Prospectus.

Disclaimer

The information in this prospectus is correct at the time of publishing. The University reserves the right to add or remove courses and to make changes in syllabi, course options, modules, fees, etc., at any stage.

Although every effort is made to ensure accuracy at the time of publication, the University reserves the right to make any corrections in the contents and provisions without notice.

For further information please contact ask.dmissions@admin.muet.edu.pk

Vision:
To become world class educational and research institute and contribute effectively towards building up indigenous & technological capabilities for sustainable socio-economic development.

Mission:
To equip our undergraduate, postgraduate and doctoral students with advance knowledge through collaborative opportunities emerged from linkages with academia, industry and government.

Quality Policy:
In line with its vision and mission, the management and faculty have developed broad based Quality Management System in the University with a strong commitment to the following:

1. **Quality Brand:**
   University aims to be recognized for its leadership position in higher education through designing interactive courses and carrying out multidisciplinary research programs and projects that are distinctive and relevant to social needs, and are of national and international quality standards.

2. **Compliance with Statutory Requirements:**
   University ensures that every individual working for and / or studying in the University shall comply with the University Act, Statutes, Regulations and Rules.

3. **Stakeholders Focus:**
   University considers every stakeholder very important and therefore endeavors to provide encouraging, flexible, empowered, cohesive and congenial working environment to assimilate, synthesize and analyze knowledge for the ultimate benefit of academia, industry, government and society.

4. **Student Focus:**
   University considers students as its direct customers and is committed to produce highly qualified manpower related to multidisciplinary engineering and technology, policy and management and business fields. University ensures meeting students' professional needs and expectations and appreciates their participatory role in maintaining progressive learning environment.

5. **Knowledge Creation and Dissemination:**
   University is focused on conducting multidisciplinary research in order to create knowledge to resolve political, technological, social and environmental issues and to disseminate this knowledge through trainings, workshops, conferences and research journals to various national and international institutions.

6. **Business Startup:**
   University is focused on facilitating startups and creating businesses based on multidisciplinary fields.

7. **Linkages and Networking**
   University establishes strong ties with various national and international universities, industries and government.

8. **Optimization of Resources:**
   University is focused that the human capital, infrastructure and financial resources must be utilized optimally for accruing and sustaining benefits.

9. **Environment Friendly:**
   University is committed to make our university environment safest, greenest and cleanest in the region.

10. **Continual Improvement:**
    University is committed to provide a rewarding and challenging environment for faculty, staff and students to kindle and sustain a passion for excellence.

MAJOR ACHIEVEMENTS

UNIVERSITY OF TODAY – WORKING FOR TOMORROW

- In Times Higher Education Interdisciplinary Science Rankings 2026, MUET is ranked 1st in Sindh and 4th in Pakistan amongst public sector engineering universities, and in 201-250th band globally.
- In QS Sustainability Rankings 2026, MUET is ranked 1st in Sindh and 6th in Pakistan amongst public sector engineering universities, and in 1201-1250th band globally.
- In QS Asian University Rankings 2026, MUET is ranked 599th in Asia and 171st in South Asia.
- In QS Word University Rankings by Subject 2026, MUET's Petroleum Engineering is ranked in 151-175th band globally.
- For UI Green Metric Rankings 2024, Mehran UET is ranked the 1st among public sector engineering universities in Sindh and the 2nd in Pakistan. Globally, MUET was ranked at the 478th position.
- 14 Patents registered
- 200+ PHD faculty members
- Internationally published books by faculty
- Innovation & Entrepreneurship Centre (IEC) Established (iec.muet.edu.pk)
- US-Pak center for advanced studies in Water (USPCAS-W) Established (Water.muet.edu.pk)
- Establishment of Society of Women Engineers (SWE)
- Establishment of Student international societies and Chapters
- International Science-Policy Conference on Climate Change in Pakistan, held at Islamabad (sp3c.com.pk)
- 18 international conferences in last 4 years
- Organized conferences in Spain, Malaysia, Nepal and Ireland
- Collaborative linkages with International/National Universities and Industries
- Leading partner university in Erasmus Mundus, European Mobility Program
- First time in MUET history, more than 80 companies participated in Job Fair
- Students Financial Aid Office providing scholarships to more than 40% students
- Social events (Alumni reunion, Model United Nations, Big Event, MUET Gala)
- Serving communities through Corporate Social Responsibility (CSR) program
- Providing continuously National Freelance Training Program to students in different trades
- Establishment of Business Incubation Center of HEC proudly led by Mehran University in Consortium.
- Mehran University publishes its own research Journal since 1982, which has now been recognized by leading indexes.
- Recently launched first research journal in social sciences named 'Repertus' which specifically focuses on language research
- Mehran UET has been selected amongst 8 Pakistani Universities for Kamyab Jawan Program.
- Mehran UET students and teachers have won numerous awards in the field of research, education and knowledge in Qatar, China, USA and many other countries.

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1. INTRODUCTION

1.1 INTRODUCTION:

Pakistan's industrial and technological landscape has undergone rapid transformation since its independence, particularly during the 1960s and 1970s. A key focus of this progress has been enhancing agriculture, establishing and upgrading industries, and exploring indigenous resources. As the demand for skilled professionals, particularly engineers, grew, educational institutions had to evolve to meet this need. Mehran University of Engineering and Technology (MUET) emerged as a crucial player in fulfilling this demand, particularly in the Sindh province.

1.2 FOUNDATION AND EARLY DEVELOPMENT:

Mehran University of Engineering and Technology, Jamshoro, was founded in 1963 as Sindh University Engineering College. It was established to provide engineering education to the people of the interior of Sindh, located in Jamshoro, approximately 15 kilometers from Hyderabad, on the right bank of the River Indus.

The decision to upgrade Sindh University Engineering College was made in response to the rising need for skilled engineers in Pakistan. The Education Policy of 1972 provided the impetus for this transformation. In 1976, the institution was first recognized as an additional campus of the University of Sindh under a Pro-Vice-Chancellor. By March 1, 1977, it was elevated to the status of an independent university through an ordinance issued by the Government of Sindh, which later became an Act of the Provincial Assembly of Sindh.

In its continued effort to promote engineering education in the interior of Sindh, the Government of Sindh established the *Mehran University College of Engineering & Technology, Khairpur Mir's*. Over time, this institution was upgraded to a campus of Mehran University, renamed the *Mehran University of Engineering & Technology, Shaheed Zulfiqar Ali Bhutto Khairpur Mir's Campus*.

1.3 ACADEMIC EXCELLENCE AND FACILITIES:

Mehran UET is renowned for its strong academic foundation, offering undergraduate, postgraduate, and doctoral degrees across various engineering, sciences, and social sciences disciplines. The university's teaching and research departments are equipped with state-of-the-art laboratories, workshops, and personal computing facilities to provide practical training and hands-on experience for students. Continuous efforts are made to upgrade these facilities, ensuring that both faculty and students have access to the latest technologies.

The university offers specialized postgraduate courses, which include Master of Engineering (ME), Master of Science (MS), Master of Business Administration (MBA), Master of Philosophy (M.Phil.), and Doctor of Philosophy (PhD). These programs are organized by various departments, specialized institutes, and directorates, such as:

- Directorate of Post Graduate Studies
- Institute of Environmental Engineering and Management
- Institute of Petroleum & Natural Gas Engineering
- Institute of Information & Communication Technologies
- Mehran University Institute of Science, Technology, and Development (MUISTD)
- U.S.-Pakistan Center for Advanced Studies in Water

Research and postgraduate education at MUET focus on addressing global challenges, with faculty members guiding students in research that leads to patents, publications, and the development of innovative technologies.

1.4 ACHIEVEMENTS AND RECOGNITION:

Mehran UET's mission is to produce high-quality graduates equipped with the skills needed to meet the needs of industry. The university is committed to fostering strong collaborations with the industrial sector, ensuring that its graduates are industry-ready and can contribute meaningfully to the technological and economic development of the country.

MUET's academic reputation is evident in its achievements:

- **ISO 9000 Certification**: MUET was the first public-sector engineering university in Pakistan to achieve this prestigious certification.

- **Global Rankings:**

  - In the *Times Higher Education - Asian Rankings 2024*, MUET was ranked the 444th in Asia, the 9th in Pakistan, and the 1st in Sindh.
  - The university secured the 1st in Sindh and the 2nd in Pakistan in the *UI Green Metric Rankings 2024*, globally ranking the 478th.
  - In the *Times Higher Education - Interdisciplinary Science Rankings 2025*, MUET ranked between the 251-300th globally and the 12th in Pakistan.

- **HEC Recognition:** In 2021, the Higher Education Commission of Pakistan (HEC) awarded MUET the Excellent Performance Award for 2018-2019.

1.5 COMMERCIALIZATION OF RESEARCH AND INNOVATION:

MUET has been at the forefront of promoting research and innovation, encouraging faculty and students to engage in cutting-edge research that addresses real-world issues. The university has successfully filed patents both nationally and internationally, many of which have led to the establishment of startups and registered companies.

The university organizes regular conferences and workshops, both nationally and internationally, providing platforms for knowledge exchange, networking, and displaying its research output.

OFFICERS OF THE UNIVERSITY

The principal Officers of the University, responsible for the overall administration, academic activities, and development work in the University.

Sr. No.	Post	Name	Phone
1.	Vice-Chancellor	Prof. Dr. Tauha Hussain Ali	022-2771197
2.	Pro-Vice-Chancellor Main Campus, Jamshoro	Prof. Dr. Aneel Kumar	022-2771360
3.	Pro-Vice-Chancellor MUET, SZAB Campus, Khairpur Mir's	Prof. Dr. Khanji Harijan	0243-9280312
4.	Dean, Faculty of Electrical, Electronic & Computer Engineering	Prof. Dr. Ashfaque A. Hashmani	022-2771558
5.	Dean, Faculty of Mechanical Process & Earth Engineering	Prof. Dr. Khadija Qureshi	022-2771312
6.	Dean, Faculty of Science, Technology & Humanities	Prof. Dr. Rizwan Ahmed Hashmani	022-2771352
7.	Dean, Faculty of Architecture & Civil Engineering	Prof. Dr. Rizwan Ali Memon	022-2771638
8.	Director, Postgraduate Studies	Prof. Dr. Abdul Haque Tunio	022-2771214
9.	Director, USPCAS-W	Prof. Dr. Kamran Ansari	022-2109145
10.	Director, Institute of Information & Communication Technologies	Prof. Dr. Nighat Arbab Kalhoro	022-2772253
11.	Director, Mehran University Institute of Science, Technology & Development	Prof. Dr. Asif Ali Shah	022-2772431
12.	Director, Institute of Environmental Engineering & Management	Prof. Dr. Muhammad Safar Korai	022-2772253
13.	Director, Institute of Petroleum & Natural Gas Engineering	Prof. Dr. Muhammad Khan Memon	022-2771241
14.	Director Quality Enhancement Cell	Prof. Dr. Rizwan A. Hashmani (Incharge)	022-2109017
15.	Registrar	Prof. Dr. Nasrullah Pirzada	022-2771371
16.	Director Finance	Mr. Ayaz Ali Khoso	022-2771442
17.	Director Admissions	Mr. Saleem Siddiqui	022-2771704
18.	Director Services	Mr. Mir Danish Ali Talpur	022-2109073

Sr. No.	Post	Name	Phone
19.	Director, Works & Strategic Planning	Mr. Saghir Ahmed Memon	022-2771311
20.	Director, ICPC	Engr. Sajidullah Memon	022-2772250
21.	Controller of Examinations	Sayed Muhammad Raza Shah	022-2771631
22.	Librarian	Mr. M. Rafique Khaskhelli (Incharge)	022-2771169
23.	Director, Sports	Mr. Abdul Fatah Kandhir	022-2109103
24.	Resident Auditor	Mr. Idrees Khan	022-2772285
25.	Advisor Students' Affairs	Prof. Dr. Abdul Fateh Abbasi	022-2772251
26.	Provost (Hostels)	Prof. Dr. Amir Mehmood Soomro	022-2772299
27.	Director ORIC	Muhammad Arif Jalbani	022-2772250
28.	Director HR	Mr. Lachman Das Soothar	022-772252

2. REGULATIONS FOR DEGREE PROGRAMS

(A). MASTER'S DEGREE:

2.1 SHORT TITLE:

These regulations may be called the Mehran University of Engineering and Technology Master's Degree Regulations 2024 framed by the University authorities. These regulations shall be deemed to have come into force with effect from 2025 batch and onwards.

2.2 ELIGIBILITY FOR ADMISSION:

i). 2.0 CGPA

For admission in Masters programs, a minimum CGPA of 2.0 (out of 4.0 in the semester system) or 60% (in the annual system) in the Bachelor's degree (4 years' university education) in the relevant field of study, whether such degree is obtained from Pakistani or foreign universities.

If the CGPA/Percentage is not mentioned on the transcript, the candidate must produce equivalent weightage from the parent university.

ii). Admission Test

The candidate must pass pre-admission test as either:

a). Equivalent to GRE/HAT General, conducted by testing bodies accredited by HEC, with a passing score of 50% OR

b). GRE General Test conducted by the University with the passing score of 50%. The University based test shall be conducted by the committee comprised of 3 members approved by the Vice Chancellor.

2.3 PROCEDURE FOR ADMISSION:

The applicant shall submit the application form duly completed in all respects along with the relevant documents by the last date fixed for this purpose. A student, if employed, shall have to obtain No Objection Certificate from his/her employer before registration. All submitted applications for admission shall be processed by the Directorate of Admissions. Incomplete application forms or applications not accompanied by the relevant documents and/or processing fee, or applications received after the due date will not be considered. The University reserves the right to refuse admission to any applicant or cancel the admission of a student at any stage if necessary.

Students seeking admission are required to pay the fees at the time of admission as approved by the University authorities. All fees paid are non-refundable except the caution money, which will be refunded at a time when student leaves the University.

2.4 TRANSFER OF CREDITS:

Transfer of course work credits earned in other institutions/or from the university previously within last five years may be approved in individual cases up to a maximum as determined by the Equivalence Committee of the University but that should not be more than 50%. The transfer of research work is not permissible.

2.5 DURATION OF PROGRAM:

The minimum duration for completing all the requirements of the Master Program shall be two (02) years or four (04) regular semesters. The duration starts from the date of admission and finishes at date of result declaration. The maximum duration, for completing all the requirements for the Master Degree Program shall be four (04) years or Eight (08) regular semesters.

A Master Degree Program shall be of 36 Credit Hours (CHs). A student can opt one of the following two streams:

- Stream-1:
- Stream-2:

The details of Stream-1 and Stream-2 are depicted in Figure-1:

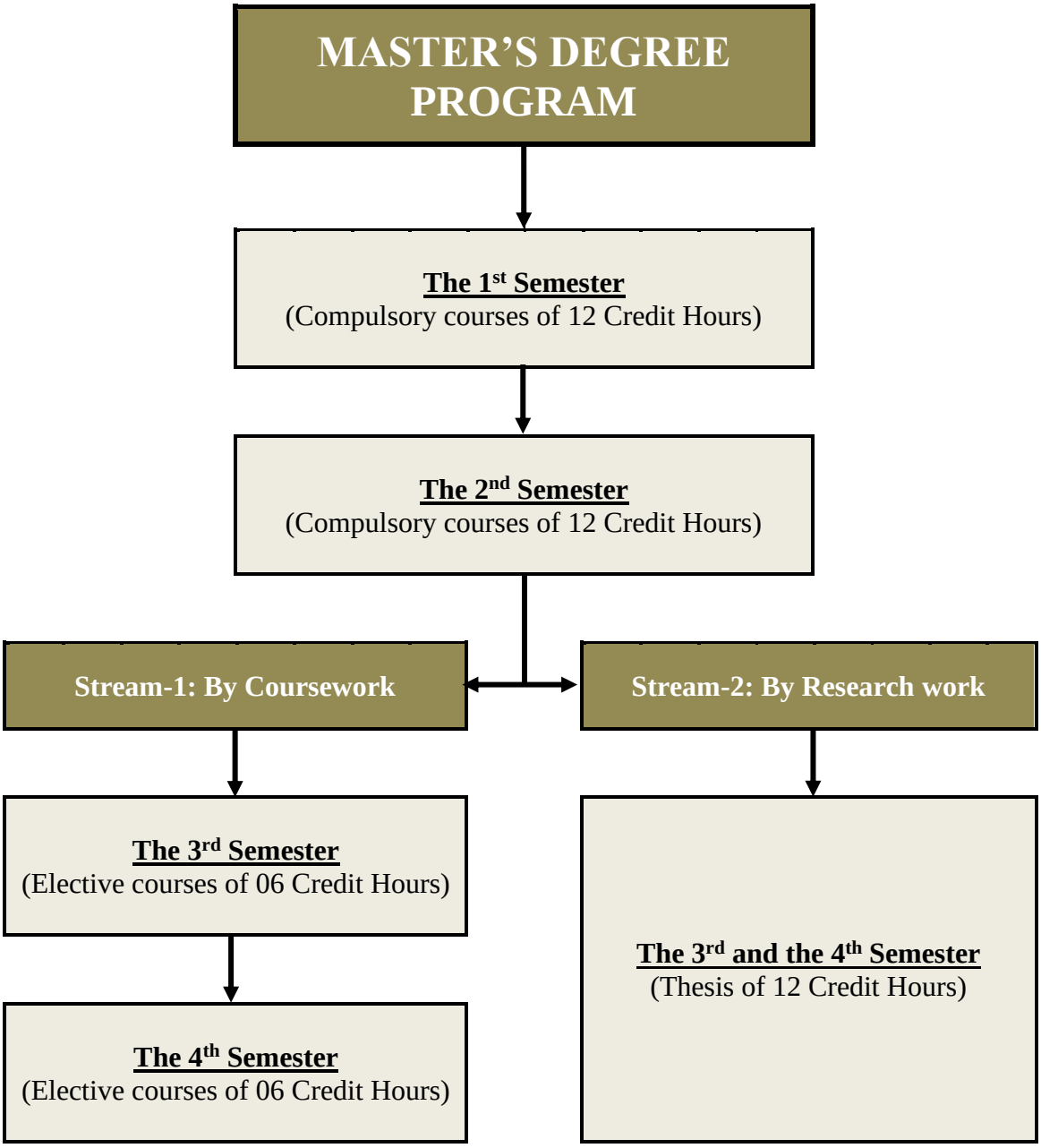


Figure-1: Flowchart of Master's Degree Program at MUET

The courses offered in 1st and 2nd semester for both the Streams shall be the same. The elective courses can be offered in 3rd and 4th semesters of the Stream-1. However, to offer multiple elective courses in 3rd and 4th semester of Stream-1, the registration of students in a course shall not be less than 10 or the entire registered students.

There shall be two semesters in an academic year. The duration of each semester shall be 22 weeks. The semester starting with the commencement of the academic year shall be called the "First Semester" and the following semester shall be called the "Second Semester". Minimum number of contact hours for a theory course of 3 C.H per semester shall be 42 and minimum number of contact hours for a theory course of 2 C.H shall be 28 and practical of 1 C.H per semester shall be 42.

The minimum requirement for evaluation of each course shall be as follows:

i). Assignment/ Test/ Quizzes
ii). Mid semester examination
iii). Final semester examination

2.6 GRADE EQUIVALENT:

Table-1: Grade Point Equivalent

Grade	Grade Point	Marks			
		Theory		Practical	
		Max Marks 100	Max Marks 50	Max Marks 100	Max Marks 100
A+	4.0	85 & above	A+	4.0	85 & above
A	3.75	75 to 84	A	3.75	75 to 84
B+	3.5	66 to 74	B+	3.5	66 to 74
B	3.0	60 to 65	B	3.0	60 to 65
C+	2.5	55 to 59	C+	2.5	55 to 59
C	2.0	50 to 54	C	2.0	50 to 54
F	0.0	0 to 49 (Fail)	F	0.0	0 to 49 (Fail)

- Fraction shall be considered as a whole number
- Courses carrying more than 100 marks in Theory/Practical shall be awarded grades accordingly.

The results shall be prepared on the basis of Grade Point Average (GPA) based on credit hours and quality points

i). Credit Hour (C.H)

One Credit Hour for a particular course is generally to be considered as one hour of teaching theory per week and for practical course 1 C.H be considered as 3 contact hours.

ii). Quality Point (Q.P)

For computation of the GPA the Quality Point is first determined by multiplying the value of the grade earned by the students with the credit hours of that course e.g. if a student obtains "A+" grade for a 3 C.H course then the Q.P of this course will be calculated as follows:

Q.P. = 4*x*3 = 12

a). Grade Point Average (GPA)

Grade Point Average is an expression for the average performance of a student in the course he/she has been offered. This is calculated by adding the quality points of all the courses taken divided by the total number of C.H offered.

$$\text{G.P.A} = \frac{\text{Sum of Quality Points}}{\text{Sum of the Credit hours}}$$

b). Cumulative Grade Point Average (CGPA)

The Cumulative Grade Point Average (C.G.P.A) is the expression describing the performance of a student is determined by the following way.

$$\text{CGPA} = \frac{\text{Sum of Quality Points for all the courses appeared}}{\text{Sum of the Credit Hours for all the courses appeared}}$$

The distribution of marks for each theory and practical course in a Semester shall be as follows as per Table-2:

Table-2: Marks Distribution for Theory and Practical Course

Theory		
Description	**Maximum Marks 100**	**Maximum Marks 50**
Test (s)/Assignment(s)/Quizzes	20%	20%
Mid Semester examination	20%	20%
Final Semester examination	60%	60%
Total	**100**	**50**

Practical		
Description	**Maximum Marks 100**	**Maximum Marks 50**
Open handed lab/Quizzes	20%	20%
Lab Evaluation Work	20%	20%
Semester Lab Examination	60%	60%
Total	**100**	**50**

Note: For the courses carrying other than 100 and 50 marks, the distribution of marks shall be accordingly.

The details of paper setting are shown in Table-3:

Table-3: Question Paper setting

Courses	**Mid Semester Examination**	**Final Semester Examination**
3 C.H courses	2 Questions* (1 hours)	5 Questions* (3 hours)
2 C.H courses	2 Questions* (45 minutes)	3 Questions* (2 hours)

*without choice.

The minimum passing marks in a course are 50. A student should have at least 75% attendance to appear in the examination. In genuine cases, maximum 10% condonation in attendance shall be the discretionary power of the Pro-Vice Chancellor/Vice Chancellor on case-to-case basis of an application to be scrutinized by the Director/Co-Director and forwarded by Dean of the concerned faculty.

The procedure of conducting examination and declaration of results shall be as follows:

i). The examination will be conducted by the Examination Department in collaboration with the concerned Institute/Directorate.

ii). The scripts of all assignments/test will be returned and scripts of mid semester examination will be shown to the students after evaluation. The solution of all assignments/ test and mid exam shall be discussed in the classrooms.

iii). Teachers will prepare four copies of the result of each course separately on the prescribed proforma and will submit three copies to the Controller of Examinations along with scripts of mid semester and final semester examination through concerned Director/Co-Director and one copy of the result to concerned Director/ Co-Director. The teacher shall also submit the result to the Controller of Examination through on-line system.

iv). The result will be announced by the Controller of Examinations.

v). For the award of Master degree, a student must secure 3.00 CGPA in coursework and must fulfill all other requirements.

vi). If a student fails in one or more courses, he/she will be given one chance to retake the course(s). If the student fails again in the same course(s), then ASRB may allow him/her to retake the course(s) upon his/her written request and forwarded by concerned Dean through Director/Co- Director.

vii). If a student passes all courses but secures less than 3.00 CGPA, he/she will be allowed to improve by retaking those courses in which he/she has secured less than 3.00 GP. Normally, more than one chance for improvement of grades shall not be allowed. However, the ASRB may allow upon his/her written request and forwarded by concerned Dean through Director/Co-Director.

2.7 RESEARCH GUIDELINES FOR STREAM-2:

i). The minimum duration of research project/thesis shall be six months with effect from the date of conduct of the Initial Seminar.

ii). A student shall be required to select a supervisor for his/her project. He/she may also select only one co-supervisor (if necessary).

iii). The supervisor should be a faculty member of MUET and his/her minimum qualification should be MPhil/MS/ME/MBA of 18 years in the relevant field.

iv). A qualified faculty member/expert of any other University or Industry may be taken as a co-supervisor, if necessary.

v). A faculty member shall not supervise or co-supervise his/her real son, daughter, brother, sister, husband or wife.

vi). Each eligible student shall prepare research proposal of his/her project in consultation with his/her Supervisor and Co-Supervisor (if any).

vii). The supervisor/co-supervisor shall scan the research proposal of the student using Higher Education Commission (HEC) approved software for plagiarism and shall submit the duly signed (by both student and supervisor/co-supervisor) hard copy containing similarity index to the concerned Director/Co-Director.

viii). The Director/Co-Director shall submit the research proposal to the concerned Dean for approval before conducting initial seminar.

ix). The student shall submit an application for conducting final seminar at least three months prior to the date of completion of degree.

x). In case of Repeat initial/final seminar, student shall submit an application for conducting his/her repeat initial/final seminar to the concerned Directorate through supervisors.

xi). The Initial and Final Seminar will be evaluated by the following:

a). The Dean of the concerned faculty or his/her nominee (must be ASRB member). In case the concerned Dean is supervisor/co-supervisor, the Pro-Vice Chancellor/ Vice Chancellor or his/her nominee shall evaluate the seminar.

b). At least one member of the Advanced Studies and Research Board (ASRB) other than the Dean of the concerned faculty.

c). One External and one internal examiner to be appointed/approved by the Vice Chancellor.

2.8 CONDUCT OF INITIAL SEMINAR:

i). A student shall be eligible to deliver Initial Seminar of his/her project if:

a). his/her minimum GPA in the first semester is not less than 3.0
b). or his/her minimum CGPA in two semesters is not less than 3.0

ii). An eligible student shall fill up the Research Proposal Proforma.
iii). The Research Proposal Proforma should be signed by the student himself/herself, his/her supervisor and co-supervisor(s), the Chairman/Chairperson/Program Coordinator, the Director/Co-Director of the Institute/Directorate and duly approved by the Dean of the concerned faculty.
iv). The Research Proposal proforma will be submitted in the office of the concerned Director/ Co-Director with the following documents:

a). Project Proposal: Each page of the proposal will be signed by the student and his/her supervisor and co-supervisor(s).
b). A copy of the Bank Challan after the payment of the processing fees.
c). Attested photo copy of the marks certificate of the first semester.
d). The Similarity index of the scanning report (Plagiarism) signed by the student and his/her supervisor and co-supervisor(s). It must be less than or equal to 19% and no any single source should have a similarity index more than or equal to 5%.
e). Attested copy of the Enrollment Card.

v). The date of the conduct of the Initial seminar shall be announced by the concerned Director/Co-Director.
vi). The student shall prepare a presentation of 20–25 minutes' duration under the guidance of his/her supervisor/co-supervisor.
vii). The student shall deliver initial seminar before the experts and ASRB members.
viii). The Director/Co-Director shall submit the evaluations of the experts and ASRB members through concerned Dean to ASRB for final approval.
ix). In case the Initial Seminar is not approved by the ASRB, the student shall be asked to deliver repeat initial seminar by incorporating the suggestions/comments/observations of the experts and ASRB members.
x). In normal circumstances, more than one repeat seminar will not be allowed. However, the ASRB may allow upon his/her written request and forwarded by concerned Dean through Director/Co-Director.
xi). In case student requests addition/replacement of co-supervisor after delivering the initial seminar, the request with the consent of supervisor and co-supervisor (if any) may be brought to ASRB for decision. Such requests can only be made at least four months before delivering the final seminar.

2.9 CONDUCT OF FINAL SEMINAR:

i). A student shall be eligible to deliver final seminar if:

a). His/her CGPA in first two semesters is not less than 3.0.
b). His/her Initial Seminar has already been approved by the ASRB.
c). He/she has worked on the project for at least six months with effect from the date of the conduct of the Initial Seminar.
d). He/she will be eligible for delivering final seminar after eight weeks of the 4^{th} semester subjected to the fulfillment of all requirements

ii). The student shall inform the concerned Director/Co-Director in written through his/her supervisor/co-supervisor(s) that he/she is ready for the final seminar.

iii). The student shall prepare a presentation of 25 to 30 minutes' duration with the consultation of his/her supervisors.
iv). The date of the conduct of the final seminar shall be announced by the concerned Director/ Co-Director.
v). The student shall deliver final seminar before the experts and ASRB members.
vi). The Director/Co-Director shall submit the evaluations of the experts and ASRB members to ASRB for final approval.
vii). If ASRB approves the final seminar, the student shall be asked to submit the loose binding of thesis book after incorporating the comments/suggestions given in the final seminar.
viii). If ASRB does not approve the final seminar, the student shall be asked to deliver another repeat final seminar by incorporating suggestions and observations of the experts and ASRB members.
ix). Normally more than one repeat final seminar will not be allowed. However, the ASRB may allow upon his/her written request and forwarded by concerned Dean through Director/ Co-Director.

2.10 SUBMISSION OF THESIS AND CONDUCT OF VIVA VOCE EXAMINATION:

i). The student shall submit three hard copies (loose bound signed by supervisors/co-supervisors) and soft copy of the thesis book to the concerned Director/Co-Director along with the processing fees of the thesis evaluation.
ii). The student shall also submit the fees for anti-plagiarism services.
iii). The supervisor shall propose a panel of external and internal experts for the conduct of the viva voce examination.
iv). The concerned Director/Co-Director shall submit this panel of experts to the Vice Chancellor for approval of one External and one Internal Examiner or may appoint other experts.
v). The Director/Co-Director shall send the names of the approved examiners to the Controller of examinations to schedule the date of final viva voce examination.
vi). The Director/Co-Director shall send one hard copy of the thesis book to the approved examiners.
vii). The final viva voce examination shall be conducted by the external and internal examiners in presence of the concerned Director/Co-Director and Supervisor/Co-Supervisor.
viii). If the examiners recommend that the student is successful in the viva voce examination, he/she may be declared pass in the viva voce examination. In case of failure, a chance may be given on the recommendation of examiners. In normal circumstances, no student shall be permitted a third chance. However, the ASRB may allow upon his/her written request and forwarded by concerned Dean through Director/Co-Director.
ix). The Director/Co-Director shall send the softcopy of the thesis to the focal person of the Anti-Plagiarism Cell of the University to scan the thesis for finding authenticity using HEC approved software for plagiarism.
x). If the scanning report has similarity index less than or equal to 19% and no any single source has a similarity index less than 5%, then thesis will be accepted for award of Master's degree. Otherwise, it will be returned back to the student until minimum similarity index as defined above is met.
xi). One hard bound copy of thesis along with scanning report and evaluation report of the examiners duly signed by all concerned shall be submitted to the Controller of the Examination for announcement of the result.

2.11 PROGRAM COMMITTEE:

Each Directorate/Institute shall have a Program committee of each program comprising the following:

- The Concerned Dean
- The Director/The Co-Director (if any)
- The Chairman/Chairperson/Program coordinator of concerned program

The Program committee shall be responsible to assess the progress of the students during the semester and the results of all the course examinations. In case of any discrepancy in the result, during scanning process, the concerned committee shall seek approval of the Vice Chancellor for rechecking the scripts by a subject expert (other than the subject teacher). The final recommendations of the Program Committee regarding the results will be submitted to Pro-Vice Chancellor/Vice Chancellor for consideration and approval.

2.12 AMENDMENT TO REGULATIONS:

These Regulations were approved in 159th Syndicate dated 11th February, 2025 vide resolution no. 159.6 (ii), and may be amended from time to time as deemed fit by the authorities of the Mehran University of Engineering & Technology, Jamshoro.

(B). DOCTORAL DEGREE:

2.13 SHORT TITLE:

These regulations may be called the Mehran University of Engineering and Technology PhD Degree Regulations 2023 framed by the University authorities. These regulations shall be deemed to have come into force with effect from 2024 batch and onwards.

2.14 ELIGIBILITY FOR ADMISSION:

i). 3.0 CGPA

a). For admission in PhD programs, a minimum CGPA of 3.0 (out of 4.0 in the semester system) or 60% (in the annual system) in the ME/MS/MBA/M.Phil./ Equivalent Degree (18 years of education) in the relevant field of study, whether such degree is obtained from Pakistani or foreign universities.

b). If the CGPA/Percentage is not mentioned on the transcript, the candidate must produce equivalent weightage from the parent university.

ii). Admission Test

The candidate must pass pre-admission test as either,

a). Equivalent to GRE/HAT General, conducted by testing bodies accredited by HEC, with a passing score of 60% OR

b). GRE General Test conducted by the University with the passing score of 60%. The University based test shall be conducted by the committee comprised of 3 members approved by the Vice Chancellor.

2.15 PROCEDURE FOR ADMISSION:

The applicant shall submit the application form duly completed in all respects along with the relevant documents by the last date fixed for this purpose. A student, if employed, shall have to obtain No Objection Certificate from his/her employer before registration. All submitted applications for admission shall be processed by the Directorate of Admissions. Incomplete application forms or applications not accompanied by the relevant documents and/or processing fee, or applications received after the due date will not be considered. The University reserves the right to refuse admission to any applicant without assigning any reason, or cancel the admission of a student at any stage if necessary.

Students seeking admission are required to pay the fees at the time of admission as approved by the University authorities. All fees paid are non-refundable except the caution money, which will be refunded at a time when student leaves the Institution.

2.16 TRANSFER OF CREDITS:

Transfer of course work credits earned in other institutions/or from the university previously within last five years may be approved in individual cases up to a maximum as determined by the Equivalence Committee of the University but that should not be more than 50%. The transfer of research work is not permissible.

2.17 DURATION OF PROGRAM:

The minimum duration for completing all the requirements of the PhD Program shall be three years or six regular semesters. The duration starts from the date of admission and finishes at date of result declaration. The maximum duration, for completing all the requirements for the PhD degree program shall be six years or twelve regular semesters. However, based upon the progress of the PhD scholar, the ASRB, may extend the period up to two years (initially for one year) on account of any special circumstances on the recommendation of the Supervisor/Co-supervisor(s). The minimum time for PhD research shall not be less than 02 years from the date of delivery of the Initial seminar to the date of delivery of Final seminar. In the case of Re-delivery of Initial seminar, the 02 years' time shall be counted from the date of re-delivery of initial seminar.

For strengthening student's knowledge in his/her research work, he/she is required to complete the course work. Each PhD Degree Program shall carry a number of approved elective courses and each course shall be assigned 3 Credit Hours (CH). Each course shall be taught by full-time regular faculty member(s) of the University. A PhD Degree Program shall have minimum 18 CH of elective course work followed by the comprehensive examination. In addition, 36 CH of research work including minimum four seminars and open defense are mandatory for qualifying the PhD Degree Program. The duration of teaching time in each semester shall be 16 weeks.

The minimum requirement for evaluation of each course shall be as follows:

1). Assignment/Test/Quizzes
2). Mid semester examination
3). Final semester examination

2.18 GRADE EQUIVALENT:

Table-1: Grade Point Equivalent

Grade	Grade Point	Marks			
		Theory		Practical	
		Max Marks 100	Max Marks 50	Max Marks 100	Max Marks 50
A+	4.0	85 & above	42 & above	85 & above	42 & above
A	3.75	75 to 84	37 to 41	75 to 84	37 to 41
B+	3.5	66 to 74	33 to 36	66 to 74	33 to 36
B	3.0	60 to 65	30 to 32	60 to 65	30 to 32
C+	2.5	55 to 59	27 to 29	55 to 59	27 to 29
C	2.0	50 to 54	25 to 26	50 to 54	25 to 26
F	0.0	0 to 49 (Fail)	0 to 24 (Fail)	0 to 49 (Fail)	0 to 24 (Fail)

- Fraction shall be considered as a whole number
- Subjects carrying more than 100 marks in Theory/Practical shall be awarded grades accordingly.

The results shall be prepared on the basis of Grade Point Average (GPA) based on credit hours and quality points

1). Credit Hour (C.H)

One Credit Hour for a particular course is generally to be considered as one hour of teaching theory per week.

2). Quality Point (Q.P)

For computation of the GPA the Quality Point is first determined by multiplying the value of the grade earned by the students with the credit hours of that course. E.g. if a student obtains "A+" grade for a 3 C.H course then the Q.P of this course will be calculated as follows: Q.P = 4x3 = 12

a). Grade Point Average (GPA)

Grade Point Average is an expression for the average performance of a student in the course he/she has been offered. This is calculated by adding the quality points of all the courses taken divided by the total number of C.H offered.

$$\text{G.P.A} = \frac{\text{Sum of Quality Points}}{\text{Sum of the Credit hours}}$$

b). Cumulative Grade Point Average (CGPA)

The Cumulative Grade Point Average (C.G.P.A) is the expression describing the performance of a student that is determined in the following way.

$$\text{CGPA} = \frac{\text{Sum of Quality Points for all the courses appeared}}{\text{Sum of the Credit Hours for all the courses appeared}}$$

The distribution of marks for a course shall be as follows:

Table-2: Marks Distribution for Theory and Practical Course

Description	Maximum Marks 100
Test (s)/Assignment(s)/Quizzes	20
Mid Semester examination	20
Final Semester examination	60
Total	**100**

Final semester examination shall be of 3 hours duration for 3 CH courses. Each question paper shall contain 5 questions without any choice. Mid semester examination shall be of one-hour duration and question paper shall contain two questions without any choice. The minimum passing marks in a subject are 50%. A student should have at least 75% attendance to appear in the examination. In genuine cases, maximum 10% condonation in attendance shall be the discretionary power of the Pro-Vice Chancellor on case-to-case basis of an application to be scrutinized by the Director/ Co-Director and forwarded by Dean of the concerned faculty.

The procedure of conducting examination and declaration of results shall be as follows:

i). The examination will be conducted by the Examination Department in collaboration with the concerned Institute/Directorate.

ii). The scripts of all assignments/test will be returned and scripts of mid semester examination will be shown to the students after evaluation. The solution of all assignments/test and mid exam shall be discussed in the classrooms.

iii). Teachers will prepare four copies of the result of each course separately on the prescribed proforma and will submit three copies to the Controller of Examinations along with scripts of mid semester and final semester examination through concerned Director/Co-Director and one copy of the result to concerned Director/ Co-Director. The teacher shall also submit the result to the Controller of Examination through on-line system.

iv). The result will be announced by the Controller of Examinations.

v). For the award of PhD degree, a student must secure 3.00 CGPA in coursework and must fulfill all other requirements.

vi). If a student fails in one or more courses, he/she will be given one chance to retake the course(s). If the student fails again in the same course(s), then ASRB may allow him/her to retake the course(s) upon his/her written request and forwarded by concerned Dean through Director/Co-Director.

vii). If a student passes all courses but secures less than 3.00 CGPA, he/she will be allowed to improve by retaking those courses in which he/she has secured less than 3.00 GP. Normally, more than one chance for improvement of grades shall not be allowed. However, the ASRB may allow upon his/her written request and forwarded by concerned Dean through Director/Co-Director.

2.19 COMPREHENSIVE EXAMINATION:

Following the completion of coursework, every PhD student shall be required to pass the comprehensive examination to be granted candidacy as a PhD researcher:

i). To appear in the comprehensive exam, a PhD candidate must secure 3.00 CGPA in the PhD Course work.

ii). The required coursework, comprehensive exam, and defense of synopsis/research proposals should be completed within the 1st six semesters (3 years) of the registration/ admission into a PhD program. In case of noncompliance, the registration/ admission may be cancelled and transcripts for completion of coursework may be issued to the student.

iii). The following are the guidelines for a conducting Comprehensive Examination:

a). The controller of examination shall be responsible for conducting the comprehensive examination on the advice made by the Director through concerned Dean, Pro-Vice Chancellor, and Vice Chancellor.

b). The exam shall be conducted on one composite question paper of 120 marks. The question paper shall be composed of 120 MCQs. The duration of the exam shall be 120 minutes. The passing percentage of the exam shall be 60.

c). The exam shall cover the elective courses studied.

d). The exam should be based on recapitulation of the conceptual knowledge of the discipline to which the student is admitted.

e). The evaluation shall be on an aggregate basis, expressed in terms of pass/fail and shall not be graded.

f). In case a student fails to pass the comprehensive examination, he/she shall be allowed to retake the exam once. However, the ASRB may allow upon his/her written request and forwarded by concerned Dean through Director/ Co-Director.

2.20 APPROVAL OF RESEARCH PROPOSAL, SUPERVISOR AND SUPERVISORY COMMITTEE:

i). Student shall fill up the Research Proposal Proforma and pay the required processing fees through bank challan.

ii). The Research Proposal Proforma shall be signed by the student, his/her supervisor and co-supervisor(s), Chairperson/Focal Person/Program Coordinator of the concerned Department/ Program, Director/Co-Director of the Institute and the Dean of the concerned faculty.

iii). The Research Proposal Proforma shall be submitted in the office of the concerned Director/ Co-Director with the following documents:

a). Research Proposal. Each page of the proposal will be signed by the student and his/her supervisor and co-supervisor(s).
b). A copy of the Bank Challan(s)/proof for the payment of the processing fees
c). The Similarity index of the scanning report (Plagiarism). It must be less than or equal to 19% and no any single source should have a similarity index more than or equal to 5%.
d). Attested copy of the Enrollment Card
e). Valid Letter of HEC/MUET approved supervisor of the supervisor and co-supervisor(s).

iv). The Director/Co-Director will process his/her application and forward it to the Advanced Studies and Research Board (ASRB) for approval. The ASRB shall also approve the supervisor/ co-supervisor(s) along with the research proposal. The maximum number of co-supervisors shall not be more than two.

v). The supervisor must be a full-time regular faculty member of the University; however, co-supervisor(s) can be opted from other universities, and/or industries, if needed.

vi). ASRB will also approve the Supervisory Committee for the PhD student comprising the following members to evaluate/monitor the progress of students as per the University regulation:

a). Supervisor
b). Co-supervisor (s) (if any)
c). Expert (s) from the field of research

2.21 CONDUCT OF INITIAL SEMINAR/DEFENSE OF RESEARCH PROPOSAL:

i). After approval of his/her research proposal by the ASRB, the student shall be required to deliver an initial seminar before the ASRB and experts.

ii). The date of the conduct of the initial seminar will be announced by the concerned Director/ Co-Director with the approval of the Vice Chancellor obtained through proper channel.

iii). The student shall prepare a presentation of 15-20 minutes duration under the guidance of his/her supervisor/co-supervisor(s).

iv). The Initial seminar shall be evaluated by the following:

a). The Dean of the concerned Faculty or his/her nominee (must be ASRB member). In case the Dean concerned is supervisor/co-supervisor, the Pro-Vice Chancellor/ Vice Chancellor or his/her nominee shall evaluate the seminar.
b). At least three Advanced Studies and Research Board (ASRB) members, excluding Dean concerned or his/her nominee, Supervisor and Co-Supervisor(s).
c). One internal examiner
d). One external examiner

v). The evaluations shall be submitted to the ASRB for final approval.

vi). In case the Initial Seminar is not approved by the ASRB, the student will be asked to deliver another seminar by incorporating the suggestions and observations of the ASRB members and experts.

vii). After approval of the initial seminar, the research proposal must be evaluated by at least three experts in the relevant field, one from within the country and the two from a technologically/academically advanced country. The panel of the experts will be proposed by the supervisor and approved by the ASRB.

viii). Then student will proceed with his/her research work under the guidance of his/her supervisor(s) in accordance with the approved Regulations of PhD degree program, and deliver progress seminars and submit progress reports as required by the ASRB.

2.22 CONDUCT OF PROGRESS – I SEMINAR:

i). A student shall be eligible to deliver Progress – I seminar if:

a). his/her initial seminar and research proposal evaluation by the experts is approved by the ASRB

b). minimum duration between the approved initial seminar and progress-I seminar is six months.

c). his/her course work including comprehensive examination is passed.

d). he/she has granted candidacy as a PhD researcher.

ii). The date of the conduct of the Progress–I seminar will be announced by the concerned Director/Co-Director with the approval of the Vice Chancellor obtained through proper channel.

iii). The PhD researcher will prepare a presentation of 15-20 minutes duration under the guidance of his/her supervisor and co-supervisor(s) and discuss the progress that he/she has achieved after his/her initial seminar.

iv). The Progress – I seminar will be evaluated by the following:

a). The Dean of the concerned Faculty or his/her nominee (must be ASRB member). In case the Dean concerned is supervisor/co-supervisor, the Pro-Vice Chancellor/ Vice Chancellor or his/her nominee shall evaluate the seminar.

b). At least three Advanced Studies and Research Board (ASRB) members, excluding Dean concerned or his/her nominee, Supervisor and Co-Supervisor(s).

c). One internal examiner

d). One external examiner

v). The evaluations shall be submitted to the ASRB for approval.

vi). In case the Progress–I seminar is not approved by the ASRB, the PhD researcher will be asked to deliver another seminar by incorporating suggestions and observations of the ASRB members and experts.

2.23 CONDUCT OF PROGRESS – II SEMINAR:

i). A PhD researcher will be eligible to deliver Progress–II seminar if:

a). his/her progress-I seminar is approved by the ASRB,

b). minimum duration between his/her approved progress-I seminar and progress-II seminar is four months and

c). he/she has completed at least 50% objectives.

ii). The date of conduct of Progress–II seminar will be announced by the concerned Director/ Co-Director with the approval of the Vice Chancellor obtained through proper channel.

iii). The PhD researcher will prepare a presentation of 15-20 minutes duration under the guidance of his/her supervisor and co-supervisor(s) and discuss about the progress that he/she has achieved after his/her Progress–I seminar.

iv). The Progress–II seminar will be evaluated by the following:

a). The Dean of the concerned Faculty or his/her nominee (must be ASRB member). In case the Dean concerned is supervisor/co-supervisor, the Pro-Vice Chancellor/ Vice Chancellor or his/her nominee shall evaluate the seminar.
b). At least three Advanced Studies and Research Board (ASRB) members, excluding Dean concerned or his/her nominee, Supervisor and Co-Supervisor(s).
c). One internal examiner
d). One external examiner

v). The evaluations will be submitted to the ASRB for final approval.
vi). In case the Progress–II Seminar is not approved by the ASRB, the PhD researcher will be asked to deliver another seminar by incorporating the suggestions and observations of the ASRB members and evaluators.
vii). At least two Progress seminars are mandatory to qualify for the final seminar.

2.24 CONDUCT OF FINAL SEMINAR:

i). A PhD researcher will be eligible to deliver final seminar if:

a). his/her Progress–II seminar has already been approved by the ASRB.
b). minimum duration between his/her approved progress-II seminar and final seminar is four months.
c). minimum duration between his/her approved initial seminar and final seminar is two years.
d). his /her final version of thesis book (loose bound) is submitted.
e). he/she has published at least one research paper in the required category of the HEC recognized journal.

ii). The PhD researcher will prepare a presentation of 30-45 minutes duration with the consultation of his/her supervisors.
iii). The PhD researcher will inform the concerned Director/Co-Director in written through his/her supervisor/co-supervisor(s) that he/she is ready for the final seminar.
iv). The Director/Co-Director will announce the date for the conduct of the final seminar with the approval of the Vice Chancellor obtained through proper channel.
v). The final seminar will be evaluated by the following:

a). The Dean of the concerned Faculty or his/her nominee (must be ASRB member). In case the Dean concerned is supervisor/co-supervisor, the Pro-Vice Chancellor/ Vice Chancellor or his/her nominee shall evaluate the seminar.
b). At least three Advanced Studies and Research Board (ASRB) members, excluding Dean concerned or his/her nominee, Supervisor and Co-Supervisor(s).
c). One internal examiner
d). One external examiner

vi). The Director/Co-Director shall submit the evaluations to ASRB for final approval.
vii). If ASRB does not approve the final seminar, the PhD researcher will be asked to deliver another final seminar by incorporating suggestions and observations of the ASRB members and experts.

2.25 SUBMISSION OF THESIS BOOK AND CONDUCT OF OPEN DEFENSE AND VIVA-VOCE EXAMINATION:

i). The PhD researcher shall submit one hard copy (loose bound) and a soft copy of the thesis book to the concerned Director/Co-Director along with the processing fees of the thesis evaluation through his/her supervisor.
ii). The PhD researcher will also submit the fees for anti-plagiarism services.

iii). The concerned supervisor/co-supervisor shall scan the thesis for plagiarism and submit the same to the concerned director. The similarity index should be less than or equal to 19% and no any single source has a similarity index greater than or equal to 5%.

iv). The soft copy of the thesis shall be sent to the approved examiners for their evaluation.

2.26 EXTERNAL EVALUATION OF PHD DISSERTATION:

i). The PhD dissertation must be evaluated by:

a). At least two external experts who shall be:

- PhD faculty member from the world top 500 universities ranked by the Times Higher Education or QS World Ranking in the year corresponding to dissertation evaluation year. **OR**

- Pakistan-based Distinguished National Professors, Meritorious Professors from any national university; or professors from top universities ranked by HEC; or professors from any Pakistani University having a minimum H-Index 30 for Sciences/Engineering, 15 for Social Sciences or 8 for Art & Humanities as determined by Web of Science.

OR*

b). At least one external expert qualifying any one of the conditions mentioned at 'a' above if the PhD candidate publishes dissertation research in a peer-reviewed journal that is classified by the HEC in category W for Sciences/ Engineering and X or above for Social Sciences.

ii). The following general guidelines shall, at least, be observed while selecting external evaluator:

a). **Relevance of Expertise:** in the same or related fields as in the dissertation.
b). **No Conflict of Interest:** in personal, financial, or professional stakes in a particular decision or outcome.
c). **Objectivity:** capable of making unbiased evaluations.
d). **Diversity:** in terms of geography, culture, professional backgrounds etc.
e). **Reputation:** must be good in the field, with a track record of fair and thorough evaluations.
f). **Availability:** should have the time and availability to review the dissertation.
g). **Professionalism:** capable of conducting themselves in a professional and respectful manner throughout the evaluation and defense process (if applicable).
h). **Communication:** capable of providing clear and constructive feedback on the dissertation.
i). **Confidentiality:** capable of maintaining confidentiality and protecting the intellectual property of the dissertation.
j). **Compatibility:** well-versed with the research methodology, approach, and theories used in the dissertation.

iii) Once satisfactory report is received from the approved evaluators, and the comments/ suggestions given by External Evaluator(s) are effectively incorporated by the PhD researcher in the dissertation, he/she will be allowed by the ASRB to appear in the open defense and viva voce examination to defend his/her thesis. However, if the research work is not considered satisfactory by the external evaluator(s) the PhD researcher shall incorporate suggestions given by the evaluators and resubmit modified thesis through his/her supervisor for further evaluation by the External Evaluator(s).

2.27 PH.D OPEN DEFENSE AND VIVA VOCE EXAM:

i). The PhD researcher shall submit two hard copies (loose bound) of the thesis book to the concerned Director/Co-Director through his/her supervisor for viva voce.

ii). The supervisor shall propose a panel of external and internal examiners for the conduct of the viva voce examination.

iii). The concerned Director/Co-Director will submit a panel of external and internal examiners to Vice Chancellor through proper channel for approval of one external examiner and one internal examiner or may appoint other examiners.

iv). The Director/Co-Director will send the names of the approved examiners to the Controller of examinations along with two hard copies of the thesis book.

v). The Controller of Examinations will send copies of the thesis to the approved examiners for their evaluation and conduct of final viva voce examination.

vi). The viva voce examination will be preceded by the open defense and will be conducted by the external and internal examiners in the presence of the concerned Director/Co-Director.

vii). If the examiners recommend that the PhD researcher is successful at the viva-voce examination, he/she may be declared to have passed the Doctor of Philosophy Degree examination. In case of failure, a second examination may be conducted on the recommendations of examiners with approval of the Vice Chancellor. In normal circumstances, no PhD researcher shall be permitted a further examination. However, the ASRB may allow the further examinations under genuine circumstances.

viii). PhD researcher shall incorporate the minor/major changes and suggestions/comments, if any, given by the panel of examiners.

ix). The PhD researcher will submit the final soft copy of the thesis after incorporating all suggestions/comments, if any, through the concerned director to the focal person of the Anti-Plagiarism Cell of the University to scan it for finding authenticity of the Thesis through HEC approved software for plagiarism.

x). If the scanning report has a similarity index less than or equal to 19% and no single source has a similarity index greater than or equal to 5% the thesis will be accepted for award of the degree. Otherwise, it will be returned to the PhD researcher. This procedure will be repeated until the minimum similarity index as defined above is met.

xi). The hard bound copies prepared on guidelines and approved by the concerned Director/Co-director and evaluation report of the examiners duly signed by all concerned will be submitted to the Controller of Examination for announcement of the result. The scanning report shall also be submitted.

xii). The hard and softcopy of the thesis shall be submitted to the HEC for PhD country directory.

2.28 RESEARCH PUBLICATION:

For award of PhD degree, a PhD researcher shall be required to publish research articles meeting the following criteria:

i). At least:

a). One research article in W category journal or two research articles in X category journals, for Science/ Engineering disciplines

b). One research article in X category journal or two research articles in Y category journals, for Social Science disciplines.

ii). The PhD researcher shall be the first author of these publications.

iii). The research article shall be relevant to the PhD research work of the PhD researcher.

iv). The article shall be published after approval of the Initial Seminar.

v). The article shall be published in a relevant research journal.

2.29 COMPLETION REPORT:

The concerned directorate shall submit a completion report of Award of PhD Degree/ Post Graduate Diploma to ASRB.

2.30 AMENDMENT TO REGULATION:

These Regulations may be amended from time to time as deemed fit by the authorities of the Mehran University of Engineering & Technology and unless specifically stated otherwise, the amended Regulations shall apply to students registered in 2024 and onwards.

3. FEES STRUCTURE OF POSTGRADUATE DEGREE PROGRAMS

A. Fee Structure for the Academic Session 2026-27 (27-Batch)

Sr. No.	Description	ME/M.ARCH./M.CRP/ MS/MBA/M.Phil.		PH.D	
		Existing	Revised	Existing	Revised
1.	Admission Fee (Per Semester)	6,000	**6,600**	12,000	**13,200**
2.	PERN Fee (Per Semester)	1,900	**2,090**	2,500	**2,750**
3.	Student Identity Card Fee (Per Year)	1000	**1,100**	1000	**1,100**
4.	Enrolment Card Fee (Once)	1,800	**1,980**	1,800	**1,980**
5.	Caution Money - Refundable (Once)	2,500	**2,750**	6,000	**6,600**
6.	Tuition Fee (per Semester)	48,500	**53,350**	60,500	**66,550**
7.	Library Fee (Per Semester)	1,200	**1,320**	4,900	**5,390**
8.	Field Visits & Other Activities (Per Semester)	2,400	**2,640**	2,400	**2,640**
9.	Games Fee (Per Semester)	1,500	**1,650**	1,500	**1,650**
10.	Examinations Fee (including Marks Certificate) for Regular Examinations (Per Semester)	3,000	**3,300**	3,000	**3,300**
11.	Transport Charges (Per Semester)	17,000	**18,700**	17,000	**18,700**
I.	**Total Admission and Semesters Fee**	**86,800**	**95,480**	**112,600**	**123,860**

Sr. No.	Hostel Fee	Existing	Revised (10%)	Existing	Revised (10%)
1.	Hostel Admission Fee (Per Year)	5,500	**6,050**	5,500	**6,050**
2.	Hostel Allotment Form Fee (Once)	1,100	**1,210**	1,100	**1,210**
3.	Student Identity Card Fee (Per Year)	550	**605**	550	**605**
4.	Room Charges (Per Semester)	11,000	**12,100**	11,000	**12,100**
5.	Medical Charges (Per Semester)	650	**715**	650	**715**
6.	Sports Charges (Per Semester)	11,00	**1,210**	11,00	**1,210**
7.	Utility Charges (Per Semester)	5,500	**6,050**	5,500	**6,050**
8.	Transport Charges (Per Semester)	11,000	**12,100**	11,000	**12,100**
9.	Caution Money - Refundable (Once)	6,600	**7,260**	6,600	**7,260**
II.	**Total Admission and Semesters Fee**	**43,000**	**47,300**	**43,000**	**47,300**
I+II	**Total Admission and Hostel Fees**	**129,800**	**142,770**	**155,600**	**171,220**

Note: *1). In case of **re-admission**, full admission fee of Master/PhD shall be charged with exception of Enrollment Fee and Caution Money.*

2). Foreign students are charged USD. 1,000/equivalent per year (USD. 500/equivalent per semester) as room charges. The other fees are the same as given above.

3). The University reserves the right to change its policies and fee structure at any time.

B.	Other Fees		
Sr. No.	Description	PH.D	
		Existing	Revised
1.	Research Proposal Processing Fee (Once)	5,000	**5,500**
2.	Thesis Evaluation Fee (Once)	24,000	**26,400**
	Total Admission and Semesters Fee	**29,000**	**31,900**

4. DIRECTORATE OF POSTGRADUATE STUDIES

(A). MASTER'S DEGREE PROGRAMS

Mehran University of Engineering and Technology started postgraduate program through the Directorate of Postgraduate Studies in December 1978 in different fields of Engineering. Currently, the following Master's Degree programs are offered by the Directorate of Postgraduate Studies in:

1.	Architecture (M.Arch.)	9.	Industrial Engineering & Management (ME)
2.	City & Regional Planning (B.CRP)	10.	Manufacturing Engineering (ME)
3.	Applied Mathematics (M.Phil.)	11.	Mining Engineering (ME)
4.	Civil Engineering (ME)	12.	Chemical Engineering (ME)
5.	Construction Management (ME)	13.	Metallurgy & Materials Engineering (ME)
6.	Structural Engineering (ME)	14.	Textile Engineering (ME)
7.	Geotechnical & Highway Engineering (ME)	15.	English Linguistics (MS)
8.	Energy Systems Engineering (ME)		





4.1 ARCHITECTURE (M.ARCH.)

4.1.1 INTRODUCTION:

The M.Arch. program, starting in Winter 2026, offers two modules one is a full-time two-year Master in Architecture curriculum that is by taught course. In Second module one-year student will study course work and in second year he will do his research work. In both modules, the candidates will be taught advanced courses in the field of Architecture. In the first two semesters, mandatory courses will be offered to students, and later on, students may either opt for elective courses or a research project/thesis for the third and fourth semesters according to their study modules of choice.

The M.Arch. program centers on research-driven design studios, anchoring architectural projects in a strong intellectual and theoretical foundation. Through this approach, students actively contribute to the national framework by prioritizing sustainable development in their designs. With a strong emphasis on critical thinking, problem-solving, and design innovation, graduates of the program will be well-equipped to tackle complex architectural challenges and contribute meaningfully to the built environment.

The scheme of studies for this program follows structure of the proposed M.Arch. program by Higher education commission for compulsory, optional and elective courses. Students can also take a research subject which may enable progression to further studies as a PhD candidate.

4.1.2 PROGRAM MISSION:

To enhance architectural education and research that integrates creativity, innovative design thinking, advanced technology, environmental sensitivity, and socio-economic priorities. Preparing graduates to lead in diverse professional settings and deliver sustainable, inclusive solutions for the built environment.

4.1.3 PROGRAM OBJECTIVES:

The objectives of the M.Arch. degree program are:

i). To prepare the graduates with excellent advanced education and skills in the field of Architecture.

ii). To engage students in applied research that promotes collaboration with academia, industry and government bodies, enabling the development of practical solutions to real-world Architectural challenges

iii). To establish strong industry linkages that enhance academic learning and prepare graduates to play impactful professional roles, contributing to national and regional development within the field of Architecture.

4.1.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Associate Professor & Chairperson: Dr. Hina Marvi PhD, (MUET, Pakistan)	Mr. Abdul Waheed Memon M.Arch., (MUET, Pakistan)
Assistant professors: Dr. Sabeen Qureshi PhD, (UTM, Malaysia)	**Lecturers:** Ms. Naheed Rohail B.Arch., (MUET, Pakistan)
Ms. Raheela Laghari ME, (MUET, Pakistan)	Ms. Firdous Soomro M.CRP, (MUET, Pakistan)
Ms. Shahnila Ansari ME, (MUET, Pakistan)	Ms. Irum Arisar M.CRP, (MUET, Pakistan)

4.1.5 STUDIOS AND LABORATORY FACILITIES:

The Department of Architecture is equipped with the required facilities, tools and equipment to conduct experiments and 3D Modelling and 3D printing facilities in the field of Architecture. The following laboratories are available at the Department of Architecture, MUET, Jamshoro:

1.	Design Studios	4.	Environment Lab
2.	Computer Lab	5.	Model Making Lab
3.	Surveying Lab	6.	Ceramics Lab

4.1.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Research Methods in Architecture	(3+0)	100
2.	Advanced Architectural Design Studio-I	(1+2)	150
3.	Sustainable Design	(3+0)	100
4.	Architectural Construction and Industrialization	(3+0)	100
Second Semester			
1.	Advanced Architectural Design Studio-II	(1+2)	150
2.	Urban Form Study	(2+0)	50
3.	Heritage Conservation	(3+0)	100
4.	Urban Design	(2+0)	50
5.	Neighborhood Revitalization	(2+0)	50

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	1+2	150	Thesis	6+0	200
2.	Elective-II	3+0	100			

Fourth Semester						
1.	Elective-III	0+2	100	Thesis	6+0	200
2.	Elective-IV	3+1	150			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Advanced Architectural Design Studio-III	(1+2)	150
2.	Contemporary Architectural Historiography	(3+0)	100
3.	Advanced Architectural Design Studio-IV	(0+2)	100
4.	Project Planning and Management	(3+1)	150

4.1.7 CAREER OPPORTUNITIES:

A Master's in Architecture can open up many job opportunities as it equips individuals with the necessary skills and knowledge to enter the field. With this degree, graduates can look forward to many career options. Positions such as architectural project manager, design architect or urban planner may be obtained with this degree. They will also be able to build a strong professional network that can help them find the right job opportunity.

Additionally, those with a master's degree in architecture will possess the technical knowledge required to competently work on various architectural projects. Obtaining a master's in architecture is an excellent way to advance one's career prospects, especially when considering the job opportunities available. Overall, having a master's in architecture provides numerous opportunities for those interested in pursuing this field of study. With this degree, graduates have access to various job roles and higher salaries than those with only a bachelor's degree.



4.2 CITY & REGIONAL PLANNING (B.CRP)

4.2.1 INTRODUCTION:

City and Regional Planning is a discipline concerned with the planned development of Urban and Rural Settlements. Urban Planning also induces and promotes socioeconomic opportunities that may assist in poverty alleviation and achieve Sustainable Development Goals (SDGs). To impart advanced skills in City and Regional Planning, and train Urban Specialists focusing on sustainable planned development considering climate change challenges, a full-time two-year master's degree program has been introduced (by coursework/ research work) with effect from 25 Batch and onwards in the field of City and Regional Planning.

In both modes, the candidates will be taught advanced courses in City and Regional Planning. In the first two semesters, mandatory courses will be offered to students, and later on, students may either opt for elective courses or a research project/thesis for the third and fourth semesters according to their study modes of choice. Both modes are designed keeping in view the academia and industry requirements. Both modes of study are capable of imparting essential knowledge and expertise to the students that can assist in their professional career build-up and improve their skills in achieving sustainable planning and development targets.

The courses are prepared in alignment with the baseline curriculum endorsed by the National Curriculum Revision Committee (NCRC), constituted by the Higher Education Commission (HEC). The curriculum is designed to meet local, national, and international standards and requirements. The new study modes can introduce innovation to ensure quality education and uniformity across Pakistan's universities.

The Department of City and Regional Planning also offers Master of Philosophy and Doctor of Philosophy degrees in the field of City and Regional Planning. These aforementioned programs are research-based and run under the Directorate of Postgraduate Studies. However, the candidates will also be taught some mandatory and elective courses in the first two semesters.

4.2.2 GROGRAM MISSION:

The master's course in City and Regional Planning will train and facilitate professionals with the interdisciplinary and inter-professional advanced skills required to meet the growing

demands of infrastructure shifting to meet climate change challenges. The planning, development, and regeneration of cities are mandatory for creating innovative and sustainable proposals to mitigate social, economic, physical, and environmental issues. The professionals, who are working and graduated in the related fields, may also apply for admission in this program to polish their skills and gain the expertise to play their part in a professional way for sustainable urban and regional development.

4.2.3 PROGRAM OBJECTIVES:

The objectives of the M.CRP degree program are:

i). To impart world-class advanced education, knowledge, and skills in the field of City and Regional Planning.
ii). To conduct outstanding basic technical and applied research in the field of City and Regional Planning.
iii). To train professionals in various streams of specializations in the field of City and Regional Planning.

4.2.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Professor and Chairman: Prof. Dr. Mir Aftab Hussain Talpur PhD, (Malaysia)	**Assistant Professor:** Dr. Fahad Ahmed Shaikh PhD, (MUET, Pakistan)
Professor: Prof. Dr. Imtiaz Ahmed Chandio PhD, (Malaysia)	Dr. Muhammad Yousif Mangi PhD, (China)
Associate Professor: Dr. Saima Kalwar PhD, (Malaysia)	Plnr. Ubedullah Soomro M.CRP, (MUET, Pakistan)
Dr. Irfan Ahmed Memon PhD, (Malaysia)	**Lecturer:** Plnr. Shahbaz Khan Samo M.CRP, (MUET, Pakistan)

4.2.5 LABORATORY FACILITIES:

The Department of City and Regional Planning is equipped with mandatory laboratory facilities and a seminar library. The students will be taught essential practical knowledge in these laboratories. The students will perform essential laboratory work under the supervision of trained and qualified faculty. The following laboratories are available at the Department of City and Regional Planning, MUET, Jamshoro:

1. Audio-Visual Lab.	5. Environmental Physics & Services Lab.
2. Computer Lab	6. Surveying, Leveling, and Remote
3. Graphic & Model Making Lab.	7. Seminar Library
4. Photographic Developing & Printing Lab.	

4.2.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Comparative Urban Planning	3 – 0	100
2.	Modern Planning Theory	3 – 0	100

3.	Sustainable Urban Land-use Planning	3 – 0	100
4.	Infrastructure Planning	3 – 0	100
Total Credit Hours		**12**	
Second Semester			
1.	Advanced Research Methods	3 – 0	100
2.	Integrated Transportation Planning	3 – 0	100
3.	Urban Land Management	3 – 0	100
4.	Development Planning in Pakistan	3 – 0	100
Total Credit Hours		**12**	

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	03	100	Thesis	6+0	200
2.	Elective-II	03	100			
Total Credit Hours					**6**	
Fourth Semester						
1.	Elective-III	03	100	Thesis	6+0	200
2.	Elective-IV	03	100			
Total Credit Hours					**6**	

- **The following is a list of elective courses:**

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
1.	Advanced Geographical Information Systems (CRP711)	(02+01)	50-50
2.	Housing and Urban Development (CRP712)	(03+00)	100
3.	Urban Governance (CRP713)	(03+00)	100
4.	Local Planning Practice (CRP714	(02+01)	50-50
5.	Implementation of Policies and Plans (CRP721)	(02+01)	50-50
6.	Urban Landscape (CRP722)	(02+01)	50-50
7.	Disaster Resilience Recovery and Rehabilitation (CRP723)	(03+00)	100
8.	Sustainable Tourism Planning (CRP724)	(03+00)	100

4.2.7 CAREER OPPORTUNITIES:

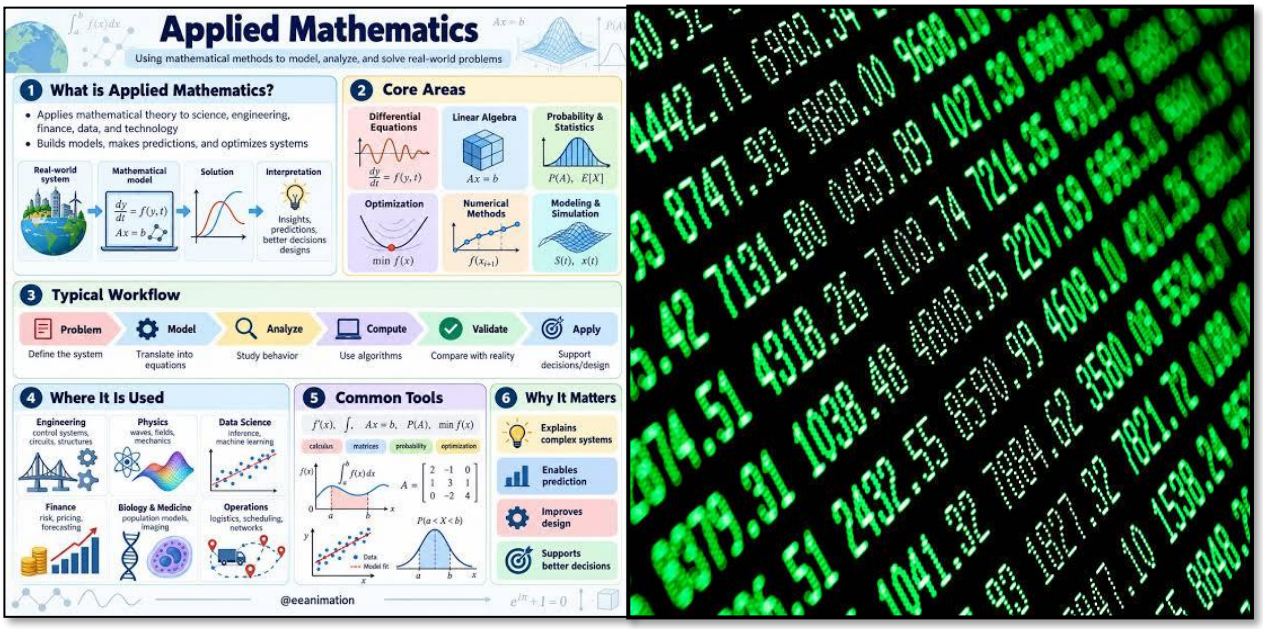
After qualifying, our graduates can serve the nation as Professional Planners in public or semi- public sector organizations. Development authorities in major cities, including Karachi Development Authority (KDA), Hyderabad Development Authority (HDA), Lahore Development Authority (LDA), Capital Development Authority (CDA), and others, have employed the majority of Town Planners on posts of Assistant Director, Deputy

Director, and Director Town Planning. Similarly, city district governments and municipal corporations/ committees also hire Town Planners in gazetted positions.

Other government organizations where Town Planners are hired include the Sindh Building Control Authority (SBCA), Planning and Development (P&D), Ministry of Defense, Civil Aviation Authority (CAA), Pakistan Army, and Pakistan Navy. Many Town Planners also work in Urban Unit, which is a public sector company. Various Town Planners extend their services as consultants for projects by the government. International agencies such as UN-Habitat, Asian Development Bank, and the World Bank also provide avenues to address pressing urban challenges, such as housing shortages and climate resilience.

Several graduates also get opportunities in various private sector organizations, including Bahria Town Karachi, Defense Housing Authority (DHA) in Karachi, OPP-Karachi, Osmani & Co., and CG Consultants, among others.

With the growing emphasis on sustainable urban growth, graduates of this program are well- positioned to impact Pakistan's cities and regions positively. This program also prepares students for leadership roles in academia, research, and policymaking, fostering solutions for equitable and resilient urban futures.



4.3 APPLIED MATHEMATICS (M.PHIL.)

4.3.1 INTRODUCTION:

The department has been offering admission in M.Phil. in Applied Mathematics since 2014. This degree is compatible with the engineering disciplines. The postgraduate studies program offered by the Department of Basic Sciences and Related Studies provides the knowledge and expertise for a career in the academic world and for pursuing a variety of other opportunities in which a strong mathematical background is important, contributing to general development and economic prosperity in particular. Applied mathematics deals with the use of mathematical concepts and techniques in various fields of science and engineering. Applied mathematics, by its very nature, has occupied a central position in this interplay and has remained a field of fascination and excitement for active minds.

4.3.2 PROGRAM MISSION:

The program is committed to provide the latest scientific mathematical and technical knowledge and quantifiable research with practical approach towards strengthening the positive changes in the societal development.

4.3.3 PROGRAM OBJECTIVES:

The educational objectives of M.Phil. in (Applied Mathematics) degree program are:

i). To prepare the graduates with excellent advanced education and skills in the field of Applied Mathematics.
ii). To involve the students in research of Applied Mathematics so as to equip them with necessary skills needed to innovative solutions of the complex problems.
iii). To motivate and direct the students go through various streams of specialization in Applied Mathematics.
iv). To inculcate in them strong communication, management and leadership skills.

4.3.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Muhammad Mujtaba Shaikh PhD, (UoS, Pakistan)	Dr. Fozia Shaikh PhD, (MUET, Pakistan)

Meritorious Professor: Dr. Syed Feroz Shah PhD, (China)	Dr. Imran Qasim Memon PhD, (MUET, Pakistan)
Professor & Chairman: Dr. Asif Ali Shaikh PhD, (UoS, Pakistan)	Dr. Kashif Ali Abro PhD, (MUET, Pakistan)
Associate Professors: Dr. Sania Qureshi PhD, (UoS, Pakistan)	Mr. Hameer Akhter Abro M.Phil., (ISRA, Pakistan)
Dr. M. Mujtaba Shaikh PhD, (UoS, Pakistan)	Dr. Ayaz Ali Siyal PhD, (MUET, Pakistan)
Assistant Professors: Mr. Abdul Saleem Memon M.Phil., (UoS, Pakistan)	Dr. Ali Asghar Sangah PhD, (MUET, Pakistan)
Dr. Zaib Un Nisa Memon PhD, (Toronto, Canada)	Dr. Sara Mahesar PhD, (UoS, Pakistan)
Mr. Muhammad Urs Jhatial M.Phil., (UoS, Pakistan)	Dr. Prem Kumar PhD, (MUET, Pakistan)
Dr. Saima Qadri PhD, (MUET, Pakistan)	

4.3.5 LABORATORY FACILITIES:

The Department of BS&RS is equipped with the required facilities and equipment to conduct practical in the field of Computational Mathematics. The following laboratories are available at the Department of BS&RS, MUET, Jamshoro.

1. Computer Laboratory	2. Modeling & Simulation Laboratory

4.3.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Applied Statistics	(3+0)	100
2.	Scientific Computing	(3+0)	100
3.	Mathematical Analysis	(3+0)	100
4.	Advanced Linear Algebra	(3+0)	100
Second Semester			
1.	Research Methodology	(3+0)	100
2.	Advanced Differential Equations	(3+0)	100
3.	Computational Fluid Dynamics	(3+0)	100
4.	Operations Research and Optimization	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	6/200	Thesis	6+0	200

Fourth Semester						
1.	Elective-II	3+0	6/200	Thesis	6+0	200

- **The following is a list of elective courses:**

Sr. No.	Subjects	Electives	Credit Hours	Marks
1.	Nonlinear Ordinary Differential Equations	**Elective-I**	3+0	100
2.	Transforms with Applications		3+0	100
3.	Applied Mathematical Physics		3+0	100
4.	Nonlinear Partial Differential Equations	**Elective-II**	3+0	100
5.	Modeling and Simulation		3+0	100
6.	Finite Element Analysis		3+0	100

4.3.7 CAREER OPPORTUNITIES:

Mathematics graduates have many options for career including teaching as well as working in multiple disciplines. If you have an aptitude for pursuing a career in mathematics can be a rewarding decision after graduation. Students with an interest in mathematics have the opportunity to apply their degrees in a variety of ways after graduation. Employers often value mathematics graduates because Mathematical graduates are in high demand. The major career employments for Mathematics graduates are:

Mathematics teacher, Lecturer or Professor, Statistician, Accountant, Meteorologist, Data scientist, financial planner and Research Analyst**.**





4.4 CIVIL ENGINEERING (ME)

4.4.1 INTRODUCTION:

The Department of Civil Engineering is an institution that provides state-of-the-art education to aspiring civil engineering graduates at the Masters and Doctorate levels so that they can evolve as research-based solution providers to the civil engineering industry.

The Master of Engineering in Civil Engineering program aims to develop highly competent professionals, preparing them for higher levels/positions in all fields of civil engineering, life-long learning (including doctorate and post-doc programs), and societal leadership. It provides a dynamic learning environment emphasizing problem-solving, teamwork, communication, and leadership skills.

4.4.2 PROGRAM MISSION:

This program prioritizes state-of-the-art learning and is committed to providing the latest scientific, mathematical, and technical knowledge. This knowledge develops the student's ability to analyze, synthesize, and design engineering systems, communicate effectively, and maintain professional ethics. This will ultimately strengthen the country's industry and bring positive changes in societal development.

4.4.3 PROGRAM OBJECTIVES:

The objectives of ME in Civil Engineering degree program are:

i). To prepare the graduates with excellent advanced education and skills in Civil Engineering.
ii). To involve the students in research on applied civil engineering.
iii). To motivate and direct professional engineers through various streams of specialization in Civil Engineering.

4.4.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Prof. Dr. Fareed Ahmed Memon PhD, (Malaysia)	Dr. Ali Raza Khoso PhD, (Malaysia)

Meritorious Professor: Prof. Dr. Tauha Hussain Ali PhD, (Australia)	Engr. Farhan Qureshi ME, (MUET, Pakistan)
Prof. Dr. Aneel Kumar PhD, (Japan)	Dr. M. Rehan Hakro PhD, (MUET, Pakistan)
Professors: Prof. Dr. Rizwan Ali Memon PhD, (MUET, Pakistan)	Dr. Anees Ahmed Vighio PhD, (Malaysia)
Prof. Dr. Nafees Ahmed Memon PhD, (Romania)	**Lecturers:** Engr. Fahad Ali Shaikh ME, (QUEST, Pakistan) - On Study Leave
Prof. Dr. Agha Faisal Habib Pathan PhD, (United Kingdom)	Engr. Lal Chand Marwari ME, (MUET, Pakistan) - On Study Leave
Prof. Dr. Zaheer Ahmed Almani PhD, (United Kingdom)	Engr. Muhammad Ali Moriyani ME, (MUET, Pakistan) – On Study Leave
Prof. Dr. Fareed Ahmed Memon PhD, (Malaysia)	Engr. Manoj Kumar ME, (MUET, Pakistan) - On Study Leave
Prof. Dr. Naeem Aziz Memon PhD, (United Kingdom) – On Lien	Engr. Rabinder Kumar ME, (MUET, Pakistan) - On Study Leave
Assistant Professors: Engr. Arshad Ali Memon ME, (MUET, Pakistan)	Engr. Abdul Qudoos Malano ME, (MUET, Pakistan)
Engr. Samar Hussain Rizvi ME, (NED, Pakistan)	Engr. Izat Ali Sahito ME, (MUET, Pakistan) - On Study Leave
Engr. Amjad Ali Pathan ME, (MUET, Pakistan)	Dr. Maroosha Larik PhD, (MUET, Pakistan)
Engr. Masroor Ali Jatoi ME, (MUET, Pakistan) - On Study Leave	Engr. Ali Raza Lashari ME, (MUET, Pakistan)
Engr. Abdul Raqeeb Memon ME, (MUET, Pakistan)	Engr. Muhammad Saleem Raza ME, (MUET, Pakistan)

4.4.5 LABORATORY FACILITIES:

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in the field of Civil Engineering, as listed below. During the course work of the ME Civil Engineering Program, the following laboratories are available to carry out experiment-based research:

1. Software Lab	6. Concrete Lab
2. Geotechnical Lab	7. Materials Testing Lab
3. Hydraulics Lab	8. Surveying Lab
4. Highway Lab	9. Engineering Geology Lab
5. Environmental Engineering Lab	

4.4.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Sustainable Structural Materials	(3+0)	100
2.	Groundwater Hydrology	(2+0)	50

3.	Advanced Geotechnical Engineering	(3+0)	100
4.	Highway Materials Testing and Design	(2+0)	50
5.	Principles of Construction Management	(2+0)	50
Second Semester			
1.	Advanced Structural Design	(3+0)	100
2.	Irrigation Management	(2+0)	50
3.	Advanced Foundation Engineering	(2+0)	50
4.	Geometrical and Pavement Design	(3+0)	100
5.	Water Supply and Sanitation Engineering	(2+0)	50

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	2+0	50	Thesis/Project Part-I	0+6	200
2.	Elective-II	2+0	50			
3.	Elective-III	2+0	50			
Fourth Semester						
1.	Elective-IV	2+0	50	Thesis/Project Part-II	0+6	200
2.	Elective-V	2+0	50			
3.	Elective-VI	2+0	50			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Rock Engineering	2+0	50
2.	Traffic Engineering	2+0	50
3.	Solid Waste Management	2+0	50
4.	Analysis and design of bridges	2+0	50
5.	Water logging and salinity control	2+0	50
6.	Procurement and contract management	2+0	50

4.4.7 CAREER OPPORTUNITIES:

The graduates of the Master of Civil Engineering (MECE) program have diverse career opportunities in government, non-government and private sectors. The MECE graduates have many opportunities for placement in various civil engineering projects within the country and abroad. They are employed in the civil engineering industry's planning, management, field investigations, surveys, structural modelling, implementation, and repair & maintenance phases. Besides, MECE graduates have a large scope in academia, research and development. Being highly educated civil engineering professionals, the MECE graduates can get lead positions in national and multinational companies within and outside the country.



4.5 CONSTRUCTION MANAGEMENT (ME)

4.5.1 INTRODUCTION:

The Master of Engineering (ME) in Construction Management program will equip graduate civil engineers with specialized expertise in managing construction projects effectively. This program bridges the gap between technical engineering skills and advanced management practices, ensuring professionals are well-prepared to address the dynamic challenges of the construction industry.

Focused on delivering comprehensive education, the program emphasizes the development of advanced knowledge and practical skills tailored to meet the current and future demands of the construction sector. Students will explore key areas such as project planning, risk management, cost control, sustainability, and integrating emerging technologies to foster innovative and efficient project execution.

Aligned with the aspirations of the construction industry, the program aims to cultivate professionals who contribute to economic growth and national development. Graduates will emerge as leaders who drive organizational success while adhering to the best global practices and sustainable development principles.

Whether pursuing careers in project management, consultancy, or academia, participants will gain the expertise necessary to make meaningful contributions to the construction industry and beyond.

4.5.2 PROGRAM MISSION:

The ME in Construction Management program aims to enhance the knowledge of graduate civil engineers in the specialized area of construction management. It intends to provide construction management education with advanced knowledge and skills suitable to the needs and aspirations of the construction industry, contributing to the development and economic prosperity of the country.

4.5.3 PROGRAM OBJECTIVES:

The objectives of the ME in Construction Management degree program are:

i). To prepare the students with advanced education and skills in construction management.
ii). To involve the students in applied construction management.

iii). To enhance the capabilities of graduate engineers to contribute in the development of the construction industry

4.5.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Prof. Dr. Nafees Ahmed Memon PhD, (Romania)	**Assistant Professors:** Dr. Ali Raza Khoso PhD, (Malaysia)
Meritorious Professor: Prof. Dr. Tauha Hussain Ali PhD, (Australia)	Dr. Anees Ahmed Vighio PhD, (Malaysia)
Professor: Prof. Dr. Nafees Ahmed Memon PhD, (Romania)	Dr. Miskeen Gopang PhD, (Pakistan)
Prof. Dr. Mir Aftab Talpur PhD, (Malaysia)	**Lecturers:** Engr. Muhammad Ali Moriyani ME, (MUET, Pakistan) - **On Study Leave**
Associate Professor: Dr. Irfan Ahmed Memon PhD, (Malaysia)	Engr. Muhammad Saleem Raza ME, (MUET, Pakistan)

4.5.5 LABORATORY FACILITIES:

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in the field of Construction Management. During the course work of the ME Construction Management Program, the following laboratories are available to carry out experiment-based research:

1. Software Lab	6. Concrete Lab
2. Geotechnical Lab	7. Materials Testing Lab
3. Hydraulics Lab	8. Surveying Lab
4. Highway Lab	9. Engineering Geology Lab
5. Environmental Engineering Lab	

4.5.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Advanced Construction Planning & Management	(3+0)	100
2.	Engineering Contracts & Procurement Methods	(3+0)	100
3.	Resource Planning & Cost Control	(3+0)	100
4.	Construction Risk Management	(3+0)	100
Second Semester			
1.	Research Methods in Construction Management	(3+0)	100
2.	Construction Safety Management	(3+0)	100
3.	Quality Management & Construction Performance	(3+0)	100
4.	Automation in Construction	(2+0)	50

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	(2+0)	50	Thesis	6+0	200
2.	Elective-II	(2+0)	50			
3.	Elective-III	(2+0)	50			
Fourth Semester						
1.	Elective-IV	(2+0)	50	Thesis	6+0	200
2.	Elective-V	(2+0)	50			
3.	Elective-VI	(2+0)	50			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Construction Law	(2+0)	50
2.	Construction Supply Chain Management	(2+0)	50
3.	Human Resource Management	(2+0)	50
4.	Sustainable & Resilient Construction	(2+0)	50
5.	Integrated Construction Project Management	(2+0)	50
6.	Construction Equipment & Management	(2+0)	50
7.	Knowledge Management in Construction Industry	(2+0)	50
8.	Construction & Building Economics	(2+0)	50
9.	Construction Business Management	(2+0)	50
10.	Organizational & Leadership Management	(2+0)	50
11.	Decision Making in Construction Management	(2+0)	50

4.5.7 CAREER OPPORTUNITIES:

Graduates of the ME Construction Management program enjoy diverse career opportunities across the construction industry and beyond. They can take on leadership roles such as project manager, construction manager, or site manager, overseeing complex projects from initiation to completion. Cost and resource management opportunities include roles like cost estimator, quantity surveyor, and procurement manager, ensuring financial efficiency and optimal resource allocation. Graduates may also excel as planning engineers driving project timelines and resource alignment. Specialized roles include Building Information Modelling (BIM) Manager and Construction Technology Specialist, focusing on advanced tools related to project management. Careers in quality and safety, such as quality control manager and safety manager, ensure compliance with standards and protocols. Additionally, advanced knowledge of construction management principles help graduates to provide innovative and sustainable solutions for the continuous development of industry.



4.6 STRUCTURAL ENGINEERING (ME)

4.6.1 INTRODUCTION:

A Master of Engineering (ME) in this field is a specialized graduate program designed to provide advanced knowledge and skills in Structural Engineering. The program is split into Stream-I (Master's by Course) and Stream-II (Master's by Research). The elective subjects are selected after two semesters in Stream-I. In Stream-II, research work is conducted along with the coursework for two initial semesters.

4.6.2 PROGRAM MISSION:

This program aims to provide advanced education, foster innovation, promote professional development, enhance practical skills, support sustainable practices, and cultivate global perspectives. The mission is to produce highly skilled engineers and foster a sense of responsibility for creating safe, sustainable, and innovative engineering solutions for the future.

4.6.3 PROGRAM OBJECTIVES:

The objectives of the ME in Structural Engineering degree program are:

i). **Develop Expertise:** Equip students with in-depth knowledge and technical skills in Structural Engineering.
ii). **Research Skills:** Encourage research and innovation in construction practices and technologies.
iii). **Industry Readiness:** Prepare engineers to become industry leaders capable of implementing best structural engineering practices.

4.6.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Prof. Dr. Aneel Kumar PhD, (Japan)	Engr. Amjad Ali Pathan ME, (MUET, Pakistan)
Meritorious Professor: Prof. Dr. Aneel Kumar PhD, (Japan)	Engr. Masroor Ali Jatoi ME, (MUET, Pakistan) - On Study Leave

Professors: Prof. Dr. Rizwan Ali Memon PhD, (MUET, Pakistan)	**Lecturers:** Engr. Fahad Ali Shaikh ME, (QUEST, Pakistan) - On study leave
Prof. Dr. Nafees Ahmed Memon PhD, (Romania)	Engr. Rabinder Kumar ME, (MUET, Pakistan) - On Study Leave
Prof. Dr. Fareed Ahmed Memon PhD, (Malaysia)	Dr. Maroosha Larik PhD, (MUET, Pakistan)
Prof. Dr. Zaheer Ahmed Almani PhD, (United Kingdom)	Engr. Ali Raza Lashari ME, (MUET, Pakistan)
Assistant Professor: Engr. Samar Hussain Rizvi ME, (NED, Pakistan)	

4.6.5 LABORATORY FACILITIES:

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in the field of Structural Engineering. During the course work of the ME Structural Engineering Program, the following laboratories are available to carry out experiment-based research:

1. Software Lab	6. Concrete Lab
2. Geotechnical Lab	7. Materials Testing Lab
3. Hydraulics Lab	8. Surveying Lab
4. Highway Lab	9. Engineering Geology Lab
5. Environmental Engineering Lab	

4.6.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Computer Applications in Structural Engineering	(3+0)	100
2.	Advanced Concrete Technology	(3+0)	100
3.	Advanced Reinforced Concrete	(3+0)	100
4.	Advanced Structural Analysis	(3+0)	100
Second Semester			
1.	Pre-stressed Concrete Design	(3+0)	100
2.	Soil Mechanics and Foundation Engineering	(3+0)	100
3.	Repair, Maintenance & Strengthening of Reinforced Concrete Structures	(3+0)	100
4.	Analysis and Design of Bridges	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis/Project	6+0	200
2.	Elective-II	3+0	100			

Fourth Semester						
1.	Elective-III	3+0	100	Thesis/Project	6+0	200
2.	Elective-IV	3+0	100			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Design of High-Rise Building	(3+0)	100
2.	Seismic Analysis and Design	(3+0)	100
3.	Finite Element Analysis and Methods	(3+0)	100
4.	Advanced Steel Structure Design	(3+0)	100

4.6.7 CAREER OPPORTUNITIES:

Structural engineering offers a wide range of career opportunities. Structural engineers work on projects involving the following roles:

- **Structural Engineer:** Designing and analyzing structures to ensure they are safe and stable.
- **Project Engineer:** Overseeing structural aspects of construction projects from start to finish.
- **Consulting Engineer:** Providing expert advice on structural design and construction.
- **Design Engineer:** Creating detailed structural designs using CAD software.
- **Site Engineer:** Managing construction sites and ensuring structural integrity during building.
- **Bridge Engineer:** Specializing in the design and maintenance of bridges.

These roles are available in various sectors, including construction companies, engineering consultants, government agencies, and research institutions. Specialization in the area of structural engineering provides a sound base to graduates to contribute towards sustainable design solutions for buildings and infrastructure.



4.7 GEOTECHNICAL & HIGHWAY ENGINEERING (ME)

4.7.1 INTRODUCTION:

A Master of Engineering (ME) in Geotechnical and Highway Engineering is a specialized graduate program that provides advanced knowledge and skills. The program is split into Stream-I (Master's by Course) and Stream-II (Master's by Research). The elective subjects are selected after two semesters in Stream-I. In Stream-II, research work is conducted along with the coursework for two initial semesters.

4.7.2 PROGRAM MISSION:

This program aims to provide advanced education, foster innovation, promote professional development, enhance practical skills, support sustainable practices, and cultivate global perspectives. The mission is to produce highly skilled engineers and foster a sense of responsibility for creating safe, sustainable, and innovative engineering solutions for the future.

4.7.3 PROGRAM OBJECTIVES:

The objectives of the ME in Geotechnical and Highway Engineering degree program are:

i). **Develop Expertise:** Equip students with in-depth knowledge and technical skills in Geotechnical and Highway Engineering.
ii). **Research Skills:** Encourage research and innovation in construction practices and technologies.
iii). **Industry Readiness:** Prepare engineers to become industry leaders capable of implementing best geotechnical and highway engineering practices.

4.7.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Prof. Dr. Agha Faisal Habib Pathan, PhD, (United Kingdom)	Engr. Samar Hussain Rizvi ME, (NED, Pakistan)
Meritorious Professor: Prof. Dr. Aneel Kumar, PhD, (Japan)	Engr. Abdul Raqeeb Memon ME, (MUET, Pakistan)

Professor: Prof. Dr. Rizwan Ali Memon, PhD, (MUET, Pakistan)	Dr. Muhammad Rehan Hakro, PhD, (MUET, Pakistan)
Prof. Dr. Agha Faisal Habib Pathan, PhD, (United Kingdom)	**Lecturers:** Engr. Lal Chand Marwari, ME, (MUET, Pakistan) - On Study Leave
Prof. Dr. Zaheer Ahmed Almani, PhD, (United Kingdom)	Engr. Manoj Kumar, ME (MUET, Pakistan) - On Study Leave
Prof. Dr. Naeem Aziz Memon, PhD, (United Kingdom) - On Lien	Engr. Abdul Qudoos Malano, ME, (MUET, Pakistan)
Assistant Professors: Engr. Arshad Ali Memon, ME, (MUET, Pakistan)	Engr. Izat Ali Sahito, ME, (MUET, Pakistan) - On study leave

4.7.5 LABORATORY FACILITIES:

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in the field of Geotechnical and Highway Engineering. During the course work of the ME Geotechnical and Highway Engineering Program, the following laboratories are available to carry out experiment-based research:

1.	Software Lab	6.	Concrete Lab
2.	Geotechnical Lab	7.	Materials Testing Lab
3.	Hydraulics Lab	8.	Surveying Lab
4.	Highway Lab	9.	Engineering Geology Lab
5.	Environmental Engineering Lab		

4.7.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Advanced Soil Mechanics and Laboratory Testing	(3+0)	100
2.	Pavement Materials Engineering	(3+0)	100
3.	Ground Improvement Techniques	(3+0)	100
4.	Geometric Design of Highways	(3+0)	100
Second Semester			
1.	Foundation Engineering and Design	(3+0)	100
2.	Pavement Design and Analysis	(3+0)	100
3.	Traffic Engineering	(3+0)	100
4.	Soil Dynamics and Earthquake Engineering	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis	6+0	200
2.	Elective-II	3+0	100			

Fourth Semester						
1.	Elective-III	2+0	50	Thesis	6+0	200
2.	Elective-IV	2+0	50			
3.	Elective-V	2+0	50			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Smart and Sustainable Pavement Materials	(3+0)	100
2.	Rock Mechanics and Foundations	(3+0)	100
3.	Transportation Planning and Policy	(2+0)	50
4.	Pavement Maintenance & Rehabilitation	(2+0)	50
5.	Tunnel Engineering	(2+0)	50

4.7.7 CAREER OPPORTUNITIES:

There are plenty of career opportunities in Geotechnical and Highway Engineering. Geotechnical engineers work on soil and rock mechanics, foundation design, and earthworks projects. They are crucial in ensuring the stability and safety of structures. Career opportunities include:

- **Geotechnical Engineer:** Working on construction sites and infrastructure projects.
- **Project Engineer:** Overseeing geotechnical aspects of construction projects.
- **Consulting Engineer:** Providing expert advice on soil and foundation issues.

Highway engineers focus on designing, constructing, and maintaining roadways and transportation systems. They ensure safe and efficient travel for vehicles. Career opportunities include:

- **Highway Engineer:** Designing and overseeing the construction of highways and roads.
- **Project Manager:** Managing highway construction projects from start to finish.
- **Traffic Engineer:** Ensuring road safety and efficient traffic flow.



4.8 ENERGY SYSTEMS ENGINEERING (ME)

4.8.1 INTRODUCTION:

Energy is vital for economic growth and improving quality of life, with per capita energy consumption reflecting socio-economic development. Pakistan faces severe energy challenges, including, energy planning, supply-demand gaps, low consumption rates, depleting oil and gas reserves, high energy costs, and environmental concerns. These issues exacerbate unemployment, poverty, and industrial stagnation. Addressing them requires skilled energy engineers to develop innovative, environmentally sustainable solutions and ensure reliable energy systems.

To meet this need, Department of Mechanical Engineering, MUET, Jamshoro is offering ME program in Energy Systems Engineering. This program focus on teaching, research, and practical training to address energy challenges like efficient resource utilization and environmental protection. The curriculum of this program attempts to equip the energy professionals to support different organizations, alongside government ministries and private-sector entities. In summary, this initiative aims to create a robust workforce to drive energy innovation and socio-economic progress.

4.8.2 PROGRAM MISSION:

The ME Energy Systems Engineering program prioritizes student learning, equipping graduates with advanced scientific, mathematical, and technical knowledge to analyze, design, and innovate engineering systems.

4.8.3 PROGRAM OBJECTIVES:

The objectives of the Energy Systems Engineering postgraduate degree programs are:

i) To prepare the graduates with excellent advanced education and skills in the field of Energy System Engineering.
ii) To involve the students in research of applied Energy System Engineering.
iii) To motivate and direct the professional engineers go through various streams of specialization in Energy System Engineering.

4.8.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor and Chairman: Dr. Tanweer Hussain PhD, (UK)	Dr. Pervez Hameed Shaikh PhD, (Malaysia)

Professor Emeritus: Dr. Mohammad Aslam Uqaili PhD, (UK)	**Assistant Professor:** Dr. Mansoor Ahmed Soomro PhD, (MUET, Pakistan)
Meritorious Professor & Program Coordinator: Dr. Khanji Harijan PhD, (MUET, Pakistan)	Dr. Shoaib Ahmed Khatri PhD, (MUET, Pakistan)
Professor: Dr. Rizwan Ahmed Memon PhD, (Hong Kong)	Dr. Laveet Kumar - **On Lien** PhD, (Malaysia)
Dr. Syed Asif Ali Shah PhD, (Austria)	Dr. Samiullah Qureshi PhD, (MUET, Pakistan)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	**Lecturer:** Dr. Ans Ahmed Memon PhD, (MUET, Pakistan)
Dr. Tanweer Hussain PhD, (UK)	Dr. Hafeez Khoharo PhD, (Malaysia)
Associate Professor: Dr. Nayyar Hussain Mirjat PhD, (MUET, Pakistan) - **On Lien**	Dr. Roshan Kumar PhD, (Malaysia)
Dr. Faheem Ullah Shaikh PhD, (China)	Engr. Waqas Ahmed Chandio ME, (PNEC, Karachi)
Dr. Muhammad Shuaib Shaikh PhD, (Malaysia)	Engr. Aftab Ahmed Khuhro ME (IBA Sukkur, Pakistan)
Dr. Masroor Ahmed Abro PhD, (China)	

4.8.5 LABORATORY FACILITIES:

The Energy System Engineering Program is equipped with the required facilities, tools and equipment to conduct experiments in the various areas of this field. The following laboratories are available for the ME program of Energy Systems Engineering:

1.	Energy Technology Laboratory	2.	Power Plants Laboratory
3.	Clean Energy Laboratory	4.	Power Systems Laboratory
5.	Fluid Mechanics Laboratory	6.	Refrigeration and Air-Conditioning
7.	Thermodynamics Laboratory	8.	Coal Research and Resource Center
9.	Heat Transfer Laboratory	10.	Energy Systems Modelling and Simulation
11.	Power Electronics Laboratory	12.	Solar Energy Laboratory

4.8.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Energy Resources and Conversion Technologies	(3+0)	100
2.	Fluid Flow and Heat Transfer	(3+0)	100
3.	Energy Transmission and Distribution	(3+0)	100
4.	Combustion and Pollution Control	(3+0)	100
Second Semester			

1.	Renewable Energy Systems	(2+0)	50
2.	Research Methodology	(2+0)	50
3.	Energy Systems Modeling and Simulation	(2+0)	50
4.	Energy Systems for Buildings	(3+0)	100
5.	Energy Economics and Management	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	(2+0)	50	Thesis	6+0	200
2.	Elective-II	(2+0)	50			
3.	Elective-III	(2+0)	50			
Fourth Semester						
1.	Elective-IV	(2+0)	50	Thesis	6+0	200
2.	Elective-V	(2+0)	50			
3.	Elective-VI	(2+0)	50			

- **The following is a list of elective courses:**

Sr. No.	**Subjects (2 CH, 50 Marks)**	**Sr. No.**	**Subjects (2 CH, 50 Marks)**
1.	Clean Coal Technologies	1.	Solar Energy: Design and Integration
2.	Power Plant Design	2.	Wind Energy: Design and Integration
3.	Hydrogen Technologies and Fuel Cells	3.	Energy Systems and Climate Change
4.	Sustainable Energy Conversion and Environment	4.	Energy Planning and Policy Analysis
5.	Advanced Energy Materials	5.	Power Conversion and Control
6.	Distributed Energy Systems	6.	Energy Storage Systems
7.	Power Electronics for Energy Systems		

4.8.7 CAREER OPPORTUNITIES:

Graduates of Energy Systems Engineering program have diverse career opportunities in organizations such as WAPDA, K-Electric, AEDB, PPIB, HDIP, PCRET, SSGCL, SNGCL, OGDC, PPL, and other government and private sector energy companies and Departments. They are also in demand in oil and gas exploration, and government ministries related to energy, climate change, planning, and alternative energy.



4.9 INDUSTRIAL ENGINEERING & MANAGEMENT (ME)

4.9.1 INTRODUCTION:

Industrial Engineering and Management (IEM) is a dynamic and interdisciplinary field that emphasizes the design, improvement, and optimization of complex systems integrating people, materials, machines, and technology. By leveraging advanced knowledge from mathematical, physical, and social sciences, along with cutting-edge engineering principles, IEM distinguishes itself through a seamless blend of engineering and management disciplines. This unique combination equips professionals to address real-world challenges across various industries. The department is equipped with state-of-the-art laboratories and training facilities, including Operations Research, Vicon Motion Capture System, Additive Manufacturing, Condition Monitoring, and Computer Integrated Manufacturing Laboratories.

Recognizing the growing significance of Industrial Engineering and Management on both national and global scales, the department has expanded its offerings to include postgraduate programs (ME and PhD). This strategic decision aims to develop professionals capable of driving innovation, operational excellence, and sustainable industrial growth.

4.9.2 PROGRAM MISSION:

The mission of the ME Program is to develop Industrial Engineering professionals through a high-quality education that integrates the latest research and practices in the field and to prepare graduates to function effectively in today's multi-disciplinary, global, and rapidly changing work environment.

4.9.3 PROGRAM OBJECTIVES:

The objectives of the ME in Industrial Engineering and Management Degree Program are to develop industrial engineering professionals who will:

i). Be able to demonstrate a comprehensive understanding of core knowledge and fundamental practices in industrial engineering.
ii). Be able to demonstrate an understanding of industrial engineering research methods and an ability to conduct research and evaluate research results.
iii). Understand their professional, social and ethical responsibilities to engage in lifelong learning and develop their management and leadership skills.

4.9.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor and Chairman: Dr. Muhammad Saleh Jumani PhD, (UK)	**Assistant Professors:** Dr. Miskeen Ali Gopang PhD, (MUET, Pakistan)
Professor: Dr. Abdul Salam Soomro PhD (MUET, Pakistan) / (UTM, Malaysia)	Engr. Hafiz Karim Bux Indhar ME, (MUET, Pakistan)
Associate Professors: Dr. Shakeel Ahmed PhD, (UK)	Engr. Arslan Ali Siddiqui ME, (MUET, Pakistan)
Dr. Sonia Mari PhD, (Korea)	Engr. Muhammad Ali Pathan ME, (MUET, Pakistan)
Dr. Muhammad Saad Memon PhD, (Korea)	**Dr. Miskeen Ali Gopang** PhD, (MUET, Pakistan)
Dr. Muhammad Saleh Jumani PhD, (UK)	

4.9.5 LABORATORY FACILITIES:

The department of Industrial Engineering and Management is equipped with the required facilities, tools and equipment to conduct experiments in field of Industrial Engineering. The following laboratories are available at the Department of Industrial Engineering and Management, MUET, Jamshoro:

1. Workshop Laboratory	5. Additive Manufacturing Laboratory
2. Operations Research Laboratory	6. Condition Monitoring Laboratory
3. Computer Aided Engineering and Simulation Laboratory	7. Human Factors and Time and Motion Study Laboratory
4. Vicon Motion Capture System Laboratory	8. Computer Integrated Manufacturing (CIM) Laboratory

4.9.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Quality and Reliability Engineering	(3+0)	100
2.	Advanced Operations Research	(3+0)	100
3.	Occupational Ergonomics	(3+0)	100
4.	Project Design and Optimization	(3+0)	100
Second Semester			
1.	Research Design and Techniques	(3+0)	100
2.	Additive Manufacturing	(3+0)	100
3.	Global Entrepreneurship	(3+0)	100
4.	Supply Chain System Design	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective I	2+0	50	Thesis	6+0	200
2.	Elective II	2+0	50			
3.	Elective III	2+0	50			
Fourth Semester						
1.	Elective IV	2+0	50	Thesis	6+0	200
2.	Elective V	2+0	50			
3.	Elective VI	2+0	50			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Technology and Innovation Management	(2+0)	50
2.	Smart Manufacturing	(2+0)	50
3.	Health Safety and Environment	(2+0)	50
4.	Computer Integrated Manufacturing	(2+0)	50
5.	Logistics Management	(2+0)	50
6.	Production System Management	(2+0)	50
7.	Accounting and Financial Management	(2+0)	50
8.	Application of GIS in Industrial Engineering	(2+0)	50
9.	Engineering Economy	(2+0)	50
10.	Design and Analysis of Experiments	(2+0)	50
11.	Human Resource Development	(2+0)	50

4.9.7 CAREER OPPORTUNITIES:

Graduates of the ME program in Industrial Engineering and Management will be well-positioned to pursue careers in diverse sectors, including government and public-sector organizations, multinational corporations, and private industries focusing on manufacturing, logistics, and services. The introduction of job-oriented curricula tailored to the needs of the industrial sector will further enhance employment prospects. Additionally, the department is committed to fostering partnerships with industries, providing a platform for applied research and innovation that meets contemporary R&D needs.



4.10 MANUFACTURING ENGINEERING (ME)

4.10.1 INTRODUCTION:

The postgraduate program in Manufacturing Engineering was started in the year 1997. The program is being run and managed by the department of Mechanical Engineering. Presently the postgraduate course in manufacturing engineering is being conducted by the faculty having qualified from some of the top institutions of the world. The aim of this course is to develop engineers and researchers with creativity and overall ability so that they can lead the world with their own capacity. Manufacturing Engineering focuses on the design and operation of integrated systems for the production of high-quality, economically competitive products.

Career fields include development and testing of new products, so it is a multidisciplinary field including elements of mechanical engineering, manufacturing engineering and management, materials science and control engineering. The course lays sound foundations and develops knowledge in the areas such as: materials engineering, manufacturing process, CAD/CIM, production engineering & management, quality control & reliability, automation & control, design for manufacturing and assembly, green manufacturing, metrology & precision engineering, industrial ergonomics and occupational health & safety.

In this program students will be introduced to the strong interactions between manufacturing and engineering design processes. The course builds on the engineering problem solving activities and continues to explore the roles of computational modeling in design and materials behavior in manufacturing. Students will learn that the design process involves the creation and prescription of the shape and characteristics of a product or machine within manufacturing and material performance constraints. Common and emerging manufacturing processes will be introduced. Students will engage in a number of Computer Aided Design and Manufacturing exercises including CNC machining of components. Students will also be introduced to the role of process simulation and modeling in manufacturing. The primary technical learning outcomes will be addressed through a combination of learning strategies including online resources, traditional lectures, active learning CAD exercises and a project-based learning assignment.

4.10.2 PROGRAM MISSION:

Masters in Manufacturing Engineering strives to produce engineering technologists and manufacturing management personals who understand the latest trends and innovation in manufacturing engineering field. This program established scientific and engineering knowledge in combination with technical skills of modern technology to support manufacturing engineering activities.

4.10.3 PROGRAM OBJECTIVES:

The objectives of the ME in Manufacturing Engineering and Management program are:

i). To advance graduates in their profession as leaders and entrepreneurs
ii). To understand and apply the principles of mathematics, science, and engineering in design and manufacturing management related activities.
iii). To produce graduates who contribute in the profitable growth of manufacturing businesses, maintain high standards of professional and ethical responsibility.

4.10.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Chairman & Program Coordinator: Dr. Tanweer Hussain PhD, (UK)	**Assistant Professors:** Engr. M. Atif Khan Qaim Khani ME, (NED UET, Pakistan)
Professors: Dr. Rizwan Ahmed Memon PhD, (Hong Kong)	Engr. Muhammad Sharif Jamali ME, (MUET, Pakistan)
Dr. Jawaid Daudpoto PhD, (UK)	Engr. Imtiaz Ali Memon ME, (NED, Pakistan)
Dr. Tanweer Hussain PhD, (UK)	Dr. Intizar Ali Tunio PhD, (MUET Pakistan)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	**Lecturers:** Dr. Hafeez Khoharo PhD, (Malaysia)
Associate Professors: Dr. Shakeel Ahmed Shaikh PhD, (Korea)	Dr. Roshan Kumar PhD, (Malaysia)
Dr. Saad Memon PhD, (Korea)	Engr. Javed Rehman Larik ME (MUET, Pakistan)
Dr. Saifullah Samo PhD, (China)	Engr. Zain-ul-Abdin Qureshi ME (NED UET, Pakistan)

4.10.5 LABORATORIES:

The Department of Mechanical Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Manufacturing Engineering. The following laboratories are available at the Department of Mechanical Engineering, MUET, Jamshoro:

1.	Computer Laboratory	9.	Mechanical Vibrations Laboratory
2.	Heat Transfer Laboratory	10.	Instrumentation & Control Laboratory
3.	Refrigeration & Air Conditioning	11.	Aerodynamics Laboratory
4.	Material Testing Laboratory	12.	Power Plants Laboratory
5.	Mechanics of Machines Laboratory	13.	Fluid Mechanics Laboratory
6.	Engineering Mechanics Laboratory	14.	Energy Technology Laboratory
7.	Thermodynamics Laboratory	15.	Automobile Engineering Laboratory
8.	Mechanical Engineering Workshop		

4.10.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Advanced Industrial Materials	3+0	100
2.	Advanced Manufacturing Processes	3+0	100
3.	Computer Integrated Manufacturing	3+0	100
4.	Operations Management	3+0	100
Second Semester			
1.	Total Quality Management	3+0	100
2.	Reliability-centered Maintenance	3+0	100
3.	Design for Manufacturing and Assembly	3+0	100
4.	Sustainable Manufacturing	3+0	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	03	100	Thesis	6+0	200
2.	Elective-II	03	100			
Fourth Semester						
1.	Elective-III	03	100	Thesis	6+0	200
2.	Elective-IV	03	100			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
Third Semester			
1.	Metrology & Precision Engineering	3+0	100
2.	Modeling & Simulation	3+0	100
3.	Industrial Ergonomics	3+0	100
4.	Manufacturing Systems Design	3+0	100
5.	Nanomaterial Technology	3+0	100
Fourth Semester			
1.	Product Life Cycle Management	3+0	100
2.	Occupational Health & Safety	3+0	100
3.	Additive Manufacturing	3+0	100
4.	Reverse Engineering	3+0	100
5.	Intelligent Manufacturing Systems	3+0	100

4.10.7 CAREER OPPORTUNITIES:

Master graduates in manufacturing engineering have a wide range of job opportunities in Pakistan. The country's manufacturing sector is growing and there is a high demand for skilled engineers and management persons, who can optimize production processes, improve efficiency and reduce costs of product. Manufacturing engineers usually work on manufacturing plant, most of the time they work inside the plant on production sites. They involved in the development of efficient systems, processes machines for high quality products.

Career fields include development and testing of new products, so it is a multidisciplinary field including elements of mechanical engineering, manufacturing engineering, materials science and control engineering.

Key industrial sectors who demand graduates of Manufacturing Engineering and Management are:

- **Automotive and Transportation:** For the position of Automotive Engineer, Design Engineer and Quality Control Engineer.
- **Energy Sector:** Energy Engineer, Plant Manager and Maintenance Engineer.
- **Manufacturing and Industrial Engineering:** Manufacturing industries like; Process industry, FMCG sector, Chemical industries, Textile industries, and Cement industries.
- **Consulting and Advisory Services:** Management Consultant, Operations Analyst, Business Process Engineer and manager at consulting various firm.



4.11 MINING ENGINEERING (ME)

4.11.1 INTRODUCTION:

Mining is the second earliest endeavor of human civilization, with agriculture being the first. These two industries held crucial roles as the primary or basic industries of early civilization. The mineral sector consistently plays a vital role in the industrial development and economic growth of nations. Pakistan is naturally endowed with ample mineral wealth, which should be profitably exploited to enhance national wealth and foster self-reliance. The demand for minerals of all kinds is higher today than ever before and continues to increase as nations strive to improve their standards of living.

Mining Engineering is a highly technical field, and today, the challenges of mining are greater than ever. High-tech techniques are now being designed to make tomorrow's mines more productive, safer, and economically successful. Mining engineers are actively seeking ways to extract essential raw materials without causing undue disturbance to the environment.

4.11.2 PROGRAM MISSION:

This program aims to discover the ways which enable the researchers to boost their capabilities to meet the challenges of mining industries with their advance knowledge related to the scientific, mathematical and technical tools with an additional knowledge to use mining-based software for the improvement of mineral industries in Pakistan.

4.11.3 PROGRAM OBJECTIVES:

The objectives of the ME in Mining Engineering degree program are:

i). The students should be expert in the advanced Mining Engineering and Technology knowledge, and also the use of various tools required

ii). After completion of the program, the master's graduates should be able to apply their advanced Mining knowledge and skills in practical field

iii). The master's graduates should have a strong/critical understanding of moral and social contemporary issues. They will also have a passion for lifelong learning and self-improvement.

4.11.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Associate Professor and Chairman: Dr. Fahad Irfan Siddiqui PhD, (MUET, Pakistan)	Dr. Sultan Ahmed Khoso PhD, (China)
Assistant Professors: Engr. Safiullah Memon ME, (MUET, Pakistan)	Dr. Muhammad Raheel Bawani PhD, (Turkey)
Dr. Munawar Ali Pinjaro PhD (China)	Dr. Muhammad Burhan Memon PhD, (China)
Dr. Shafi Muhammad Musab Ahmed PhD, (MUET, Pakistan)	Dr. Saleem Raza Baloch PhD, (MUET, Pakistan)

4.11.5 LABORATORY FACILITIES:

The department of Mining Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Mine Planning and design, Mineral characterization, Mineral processing, Surface and Underground Mining operations. The following laboratories are available at the Department of Mining Engineering MUET, Jamshoro:

1.	Advance Research Laboratory	5.	Mine Ventilation Laboratory
2.	Rock Mechanics Laboratory	6.	Surveying and Mine Planning Lab
3.	Mineral Processing Laboratory	7.	Computer Laboratory
4.	Coal Testing Laboratory		

4.11.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Rock Mechanics Design	3 + 0	100
2.	Advanced Characterization & Processing Techniques	3 + 0	100
3.	Sustainable Mining Practices	3 + 0	100
4.	Research Methods & Techniques	2 + 0	50
5.	Computer Aided Mine Planning and Design	0 + 1	50
Second Semester			
1.	Open Pit Production Planning	3 + 0	100
2.	Advanced Coal Processing Technology	3 + 0	100
3.	Design and Control of Mine Water	3 + 0	100
4.	Project Management in Mining Engineering	3 + 0	100

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	03	100	Thesis	6+0	200
2.	Elective-II	03	100			

Fourth Semester						
1.	Elective-III	03	100	Thesis	6+0	200
2.	Elective-IV	03	100			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Rock Slope Engineering	3 + 0	100
2.	Mine Cost Analysis and Control	3 + 0	100
3.	Geo statistics and Resource Estimation	2 + 1	100
4.	Environmental Impact Assessment in Mining	3 + 0	100
5.	Mine Closure and Rehabilitation	3 + 0	100
6.	Remote Sensing and GIS in Mining	3 + 0	100
7.	Advanced Hydrometallurgy	3 + 0	100
8.	Climate Change and Mining	3 + 0	100
9.	Advanced Flotation Technology	3 + 0	100
10.	Coal Operations and Conversion Technologies	3 + 0	100
11.	AI in Mining and Mineral Processing	3 + 0	100
12.	Chemistry of Mineral-Water System	3 + 0	100
13.	Operations Research and Mine Optimization	3 + 0	100
14.	Earth Moving Equipment Technology and Management	3 + 0	100
15.	Principles of Tunnel Design and Construction Techniques	3 + 0	100

4.11.7 CAREER OPPORTUNITIES:

The Master of Engineering in Mining Engineering opens pathways to advanced careers in academia, research, and industry, preparing graduates to address global mining challenges. Graduates can secure senior roles in public sector organizations like the Directorate of Mineral Development, Sindh Coal Authority, and Pakistan Atomic Energy Commission, contributing to national resource strategies. In the private sector, they can lead projects in mine design, resource optimization, and sustainable practices within multinational mining corporations, cement industries, and mineral processing facilities. The program also fosters expertise in emerging fields, including digital mining, automation, and renewable energy integration. Graduates will be well-prepared for PhD opportunities globally, specializing in areas such as mine ventilation, geothermal energy, and sustainable resource extraction. With a curriculum emphasizing global applicability and innovative technologies, the program equips graduates to transform the mining industry, ensuring efficient resource utilization while addressing critical environmental and societal challenges worldwide



4.12 CHEMICAL ENGINEERING (ME)

4.12.1 INTRODUCTION:

The postgraduate program in Chemical Engineering started back in 1980. The Chemical Engineering Department strongly believes in collaboration with national and international HEIs. It has actively contributed to developing connections with Brunel University, UK, the University of Exeter, UK, and the University of Arizona, United States. More than 90% of the faculty members hold PhD degrees and are actively engaged in diverse research areas.

4.12.2 PROGRAM MISSION:

Consistent with the Department's mission, program's mission it to provide sound research and learning environment to ME students and enabling them to realize the frequently changing trends of Chemical Engineering.

4.12.3 PROGRAM OBJECTIVES:

The objectives of the ME in Chemical Engineering degree program are:

i). To prepare the graduates with advanced knowledge of core Chemical Engineering subjects for the practical applications.
ii). To enhance the technical, analytical and research skills of graduates for analyzing and solving complex industrial problems.
iii). To teach the graduate students about professional ethics necessary for the conduct of research and scientific writing.

4.12.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Chairman: Dr. Inamullah Bhatti PhD, (Malaysia)	Dr. Zulfiqar Ali Bhatti PhD, (MUET, Pakistan)
Meritorious Professor: Dr. Khadija Qureshi PhD, (MUET, Pakistan)	Dr. Khan Muhammad Qureshi PhD, (Malaysia)
Professor: Dr. Zeenat M. Ali PhD, (MUET, Pakistan)	Dr. Sikandar Mustafa Almani PhD, (France)

Dr. Aziza Aftab PhD, (MUET, Pakistan)	**Assistant Professor:** Engr. Aisha Kousar Abro ME, (MUET, Pakistan)
Associate Professors: Dr. M. Shuaib Shaikh PhD, (Malaysia)	Dr. Zulfiqar Ali Solangi PhD, (MUET, Pakistan)
Dr. Imran Nazir Unar PhD, (MUET, Pakistan)	**Lecturer:** Engr, Faiz Abro ME (MUET, Pakistan)
Dr. Masroor Ahmed Abro PhD, (China)	

4.12.5 LABORATORY FACILITIES:

The department of Chemical Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Chemical Engineering. The following laboratories are available at the Department of Chemical Engineering, MUET, Jamshoro:

1.	Particulate Technology Laboratory	7.	Chemical Reaction Engineering Lab
2.	Mass Transfer Laboratory	8.	Analytical Research Laboratory
3.	Fluid Mechanics Laboratory	9.	Instrumentation & Process Control Lab
4.	Heat Transfer Laboratory	10.	Chemistry Laboratory
5.	Biochemical & Food Processing Lab	11.	Fuels & Energy Laboratory
6.	Computer Laboratory	12.	Water Quality Research Laboratory

4.12.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Natural Gas Processing	(3+0)	100
2.	Advanced Separation Processes	(3+0)	100
3.	Energy Management	(3+0)	100
4.	Polymer Technology	(3+0)	100
Second Semester			
1.	Process Simulation & Modeling	(3+0)	100
2.	Advanced Analytical Techniques and Research Methodology	(3+0)	100
3.	Industrial Waste Management	(3+0)	100
4.	Artificial Intelligence in Chemical Engineering	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	(3+0)	100	Thesis	6+0	200
2.	Elective-II	(3+0)	100			
Fourth Semester						

1.	Elective-III	(3+0)	100	Thesis	6+0	200
2.	Elective-IV	(3+0)	100			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Reactor Design & Kinetics	(3+0)	100
2.	Advanced Combustion & Clean Coal Technology	(3+0)	100
3.	Bioprocessing & Food Technology	(3+0)	100
4.	Health Safety and Environment	(3+0)	100
5.	Green Technologies and Sustainable Development	(3+0)	100
6.	Molecular Dynamic Simulations	(3+0)	100
7.	Project Management	(3+0)	100
8.	Advanced Transport Phenomena	(3+0)	100

4.12.7 CAREER OPPORTUNITIES:

Graduates of the ME in Chemical Engineering program are equipped to excel in diverse roles across industries and research. They can lead process optimization and management in sectors like oil and gas, petrochemicals, pharmaceuticals, and renewable energy. Opportunities also exist in environmental and sustainability consulting, where they contribute to waste management, pollution control, and eco-friendly process design.

The program prepares graduates for advanced research roles, driving innovation in emerging areas such as nanotechnology, material science, and green technologies. With a strong focus on problem-solving and technical expertise, graduates are well-suited for leadership positions in R&D, academia, and industrial consultancy.

Whether advancing sustainable development goals or improving industrial efficiency, ME graduates are at the forefront of creating solutions for today's global challenges.



4.13 METALLURGY & MATERIALS ENGINEERING (ME)

4.13.1 INTRODUCTION:

The Department of Metallurgy and Materials Engineering at Mehran University of Engineering & Technology (MUET) offers a Master of Engineering (ME) degree in Metallurgy and Materials Engineering. Established in 1972, the department has a longstanding history of providing quality education and research opportunities in the field. Metallurgy and Materials Engineering plays a pivotal role in the discovery, design, and development of advanced materials that are essential for modern technological advancements.

These materials include high-performance alloys, composites, ceramics, polymers, and nanomaterials. Their development enables breakthroughs in various engineering fields, including aerospace, automotive, electronics, construction, and energy sectors. The field of Metallurgy and Materials Engineering has also embraced nanotechnology, which involves the manipulation of materials at the atomic and molecular scale to achieve unique and enhanced properties. The ME program at this department aims to prepare students to contribute to these advancements, ensuring they have the theoretical foundation and practical expertise to address the ever-evolving challenges in metallurgy and materials engineering.

4.13.2 PROGRAM MISSION:

The mission of the Master of Engineering (ME) program in Metallurgy and Materials Engineering at Mehran University of Engineering & Technology is to cultivate highly skilled professionals equipped with advanced knowledge in metallurgy and materials engineering. The program seeks to foster innovation, critical thinking, and problem-solving abilities, enabling graduates to contribute effectively to the discovery, design, and development of advanced materials, and nanomaterials.

4.13.3 PROGRAM OBJECTIVES:

The objectives of the ME in Metallurgy & Materials Engineering degree program are:

i). This program shall equip graduates to develop advance technical expertise to analyze, design and develop advance materials

ii). Encourage and foster students in cutting-edge research and innovative practices, particularly in emerging fields like nanotechnology, to address complex engineering challenges and contribute to advancements in technology and industry.

iii). Instill a commitment to sustainable development and ethical practices by integrating environmental, societal, and professional responsibility into the program, preparing students to contribute positively to global engineering challenges

4.13.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Associate Professor and Chairman: Dr. Umair Aftab, PhD, (MUET, Pakistan)	Dr. Imtiaz Ali Soomro PhD, (Malaysia) - **On Post. Doc Leave**
Associate Professors: Dr. M. Wasim Akhtar PhD, (South Korea)	Engr. Ayatullah Qureshi ME, (MUET, Pakistan)
Assistant Professors: Dr. Muddassir Ali Memon PhD, (MUET, Pakistan)	**Lecturer:** Engr. Mukesh Kumar - **On Study Leave** ME, (MUET, Pakistan)

4.13.5 LABORATORY FACILITIES:

The department of Metallurgy and Materials Engineering is equipped with state-of-the-art laboratories for, providing students with access to essential resources for both coursework and research. The following laboratories are available at the Department of Metallurgy & Materials, MUET, Jamshoro:

1.	Advanced Characterization	5.	Heat Treatment & Fabrication
2.	Material Testing Lab-I	6.	Materials Synthesis Laboratory
3.	Material Testing Lab-II	7.	Computer & Simulation Laboratory
4.	Non-destructive Testing Laboratory		

4.13.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Mechanical Behavior of Materials	(3+0)	(100+0)
2.	Materials Characterization Techniques	(3+0)	(100+0)
3.	Advanced Manufacturing	(3+0)	(100+0)
4.	Materials Thermodynamics	(3+0)	(100+0)
Second Semester			
1.	Phase Transformations	(3+0)	(100+0)
2.	Computational Materials Engineering	(3+0)	(100+0)
3.	Research Methodology	(3+0)	(100+0)
4.	Design and Selection of Materials	(3+0)	(100+0)

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						

1.	Elective-I	3+0	100+00	Thesis	6+0	200
2.	Elective-II	3+0	100+00			
Fourth Semester						
1.	Elective-III	3+0	100+00	Thesis	6+0	200
2.	Elective-IV	3+0	100+00			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
Third Semester			
1.	Corrosion and Protection Techniques	03+00	100+00
2.	Thin film and Surface Engineering	03+00	100+00
3.	Additive Manufacturing	03+00	100+00
4.	Synthesis and Design of Nanomaterials	03+00	100+00
5.	Advanced Composite Materials	03+00	100+00
6.	Advances in Ferrous and Nonferrous Alloys	03+00	100+00

Sr. No.	Subjects	Credit Hours	Marks
Fourth Semester			
1.	Advance Biomaterials	03+00	100+00
2.	Advanced Energy Materials	03+00	100+00
3.	Polymer and Processes	03+00	100+00
4.	Ceramics and processes	03+00	100+00
5.	Construction Materials	03+00	100+00
6.	High Temperature Materials	03+00	100+00

4.13.7 CAREER OPPORTUNITIES:

After completing a Master of Engineering in Metallurgy and Materials Engineering, graduates in can explore a wide range of career opportunities in various sectors. In the steel and metal industries, seek metallurgists and process engineers to optimize production and ensure product quality. The aerospace and automotive sectors, including Pakistan Aeronautical Complex and Heavy Industries Taxila, require materials engineers to develop advanced, lightweight materials for aircraft and vehicle components. The oil, gas, and energy sectors, with companies like OGDCL and PPL, offer roles in materials testing, corrosion control, and project management. Nanotechnology, a growing field, provides opportunities in electronics, energy storage, and biomedical applications, where experts in nanomaterials are highly sought. Research institutions and academia offer roles in innovation and teaching, while graduates can also explore entrepreneurship opportunities in material testing labs and consultancy.





4.14 TEXTILE ENGINEERING (ME)

4.14.1 INTRODUCTION:

The Department of Textile Engineering at Mehran University of Engineering and Technology (MUET) was established in 1993 and the ME Textile Engineering Program was started in 2008 to address the growing demand for skilled professionals in the textile industry at the Masters level. The program provides a strong foundation in textile engineering, preparing graduates to meet the challenges of an evolving sector.

The curriculum covers key areas like textile manufacturing, material science, quality control, and sustainability. Students gain both theoretical knowledge and practical experience, developing skills to solve complex problems in textile production, design, and innovation. Through hands-on laboratory work, internships, and industry collaborations, graduates are prepared for careers in manufacturing, design, research, and development.

4.14.2 PROGRAM MISSION:

The mission of the Master of Engineering in Textile Engineering program is to develop highly skilled professionals who can lead innovation and drive sustainable advancements in the textile industry and equip the graduates with advanced technical expertise and problem-solving capabilities to address global challenges in textile manufacturing, design, and technology.

4.14.3 PROGRAM OBJECTIVES:

The objectives of the ME in Textile Engineering degree program are:

i). To provide advanced knowledge and skills in textile engineering, preparing graduates for leadership roles in the textile industry
ii). To foster innovation and research in textile materials, manufacturing processes, and sustainable technologies.
iii). To develop problem-solving abilities that enable graduates to address complex challenges and drive technological advancements in the textile sector.

4.14.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Chairperson:	**Assistant Professor:**
Prof. Dr. Awais Khatri PhD, (Australia)	Dr. Sanam Irum Memon PhD, (MUET, Pakistan)

Professor: Prof. Dr. Zeeshan Khatri PhD, (Japan)	Dr. Abdul Wahab Memon PhD, (Belgium)
Prof. Dr. Farooq Ahmed PhD, (MUET, Pakistan)	Dr. Rabia Almas PhD, (MUET, Pakistan)
Associate Professors: Dr. Iftikhar Ali Sahito PhD, (South Korea)	Dr. Umaima Saleem PhD, (Turkey)
Dr. Samander Ali Malik PhD, (Germany)	Dr. Pardeep Kumar Gianchandani PhD, (Italy)
Dr. Abdul Wahab Jatoi PhD, (Japan)	Dr. Nadir Ali PhD, (China)
Dr. Naveed Mengal PhD, (South Korea)	**Lecturers:** Dr. Sadaf Aftab Abbasi PhD, (Australia)
Dr. Raja Fahad Ashraf Qureshi PhD, (MUET, Pakistan)	Engr. Abdul Khalique ME, (MUET, Pakistan)

4.14.5 LABORATORY FACILITIES:

The department of Textile Engineering is equipped with the required facilities, tools and equipment to conduct experiments in the field of textile engineering. The following laboratories are available at the Department of Textile Engineering, MUET, Jamshoro:

1.	Yarn Manufacturing Laboratory	7.	Computer Laboratory
2.	Fabric Manufacturing Laboratory	8.	Color Research Laboratory
3.	Knitting Laboratory	9.	Nanomaterials Research Laboratory
4.	Textile Chemical Processing Lab.	10.	Functional Materials and Polymer Engineering Laboratory
5.	Textile Testing & Quality Control Lab.	11.	Smart and Energy Textile Materials Research Laboratory
6.	Garment Manufacturing Laboratory		

4.14.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Advanced Fiber Science	(3+0)	100
2.	Applied Textile Process Engineering	(2+0)	50
3.	Woven Fabric Engineering	(2+0)	50
4.	Textile Composites	(2+0)	50
5.	Yarn Engineering	(3+0)	100
Second Semester			
1.	Advanced Textile Coloration and Finishing	(3+0)	100
2.	Technical Textiles	(3+0)	100
3.	Automation and Textile Process Control	(3+0)	100
4.	Nonwoven Engineering	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis	6+0	200
2.	Elective-II	3+0	100			
Fourth Semester						
1.	Elective-III	3+0	100	Thesis	6+0	200
2.	Elective-IV	3+0	100			

- **The following is a list of elective courses:**

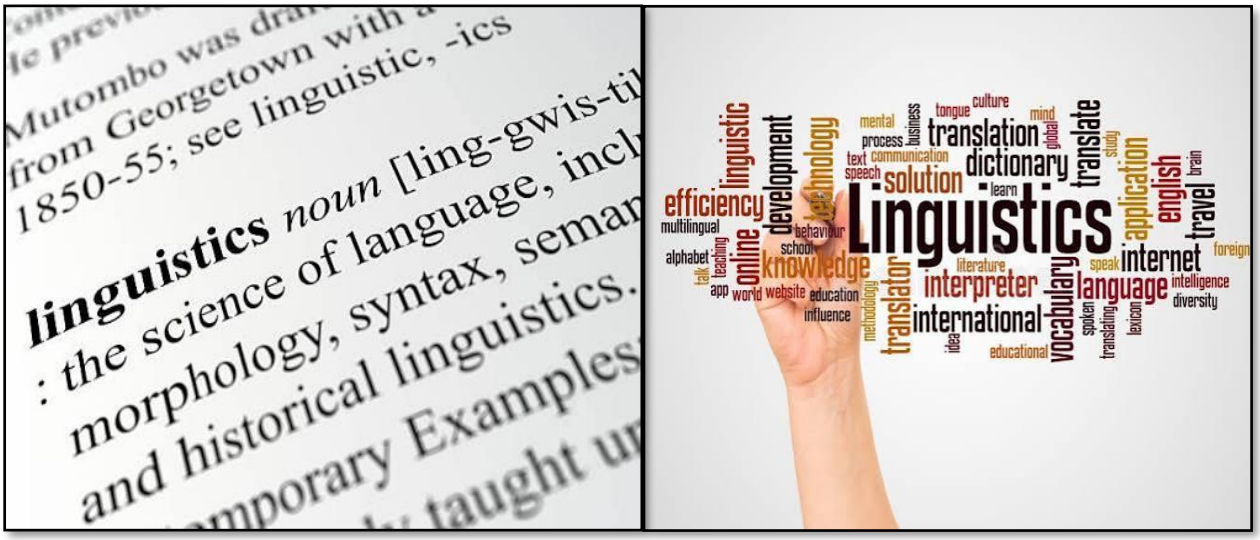
Sr. No.	Subjects	Credit Hours	Marks
Third Semester			
1.	Clothing Construction Engineering	(3+0)	100
2.	Knitted Fabric Engineering	(3+0)	100
3.	Advanced Characterization Techniques	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
Fourth Semester			
1.	Modeling and Simulation	(3+0)	100
2.	Lean Manufacturing	(3+0)	100
3.	Sustainable Methods and Manufacturing	(3+0)	100

4.14.7 CAREER OPPORTUNITIES:

Graduates with a Master's in Textile Engineering in Pakistan have diverse career opportunities in the thriving textile industry, which is the backbone of the country's economy. They can pursue roles in textile manufacturing, quality control, research and development, and process engineering. Opportunities exist in leading textile mills, apparel manufacturing units, and export-oriented firms. Graduates may also work as product developers, sustainability consultants, or technical experts in dyeing, printing, and finishing. Teaching and academic research positions are available at universities and technical institutions. Additionally, there is growing demand in nonwoven textiles, smart textiles, and technical textiles sectors.

Entrepreneurial graduates can start their own textile businesses or consultancies. With global exposure, they can secure roles in multinational companies or pursue further specialization abroad, contributing to the modernization and sustainability of the textile industry.



4.15 ENGLISH LINGUISTICS (MS)

4.15.1 INTRODUCTION:

This program aims to extend the limits of the knowledge and skills of those who are interested in carrying out research in the field. The program aims to equip students with an understanding of key issues and research findings in English Linguistics, and with the skills to make a significant professional contribution to the field. The entire program is in line with the vision of the Higher Education Commission of Pakistan, with the intent to produce prospective leadership and knowledge building among our students.

4.15.2 PROGRAM MISSION:

The Centre of English Language and Linguistics (CELL) is committed to prepare qualified human resources by advancing, applying, and imparting knowledge in English Language Education and English Linguistics through comprehensive educational programs, research in collaboration with industry and government, and dissemination through scholarly products.

4.15.3 PROGRAM OBJECTIVES:

The MS English (Linguistics) program is a year (2 semesters) taught and research program that covers the contemporary concerns of English Language Teaching and Applied Linguistics at all educational levels. The focus of this program is on how ELT theory relates to classroom practice. The potential postgraduate students are expected to develop their understanding on linguistic research. This program is in line with the syllabus set up by the HEC of Pakistan and will help to achieve:

The objectives of the MS in English Linguistics degree program are:

i). Familiarity with the issues currently at the forefront of research in English Language Teaching/Applied Linguistics
ii). An understanding of how theory relates to practice; a broader view of the links between classroom activities and approaches to program for designing teacher training and management decisions.
iii). A comprehensive skill to conduct research in the field.
iv). Provide opportunity to extend professional experiences by working with other different educational and language backgrounds.

4.15.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Program Coordinator: Mr. Shoukat Ali Lohar M.Phil., (Iqra University, Pakistan)	Ms. Shamshad Junejo MS, (MUET, Pakistan)
Professor: Dr. Habibullah Pathan PhD, (UK), Post Doc., (USA) - **On Lien**	Ms. Nazia Koonj MS, (MUET, Pakistan
Associate Professors: Dr. Sahiba Khatoon Thaheem PhD, (Malaysia)	Mr. Fayaz Ali Chandio MS, (MUET, Pakistan)
Dr. Shumaila Memon PhD, (UK), Post Doc., (USA) - **On Lien**	Ms. Qirat Baloch MS, (MUET, Pakistan)
Assistant Professors: Ms. Quratulain Mirza PhD, (UoS, Pakistan)	Ms. Naila Baloch MS, (MUET, Pakistan)
Mr. Shoukat Ali Lohar M.Phil., (IU, Pakistan)	Mr. Zakaullah Korejo MS, (MUET, Pakistan)
Ms. Sadia Inayat MS, (MUET, Pakistan)	Ms. Soomal Junejo MS, (MUET, Pakistan)
Ms. Sania Sachal MS, (MUET, Pakistan) - **On Study Leave**	Ms. Nargis Fatima M.Phil., (UoS, Pakistan)
Dr. Jam Khan Muhammad PhD, (UoS, Pakistan)	Ms. Tahreem Akhter MPhil, (UoS, Pakistan)
Dr. Syed Waqar Ali Shah PhD, (Finland)	Ms. Noor-ul-Huda Brohi MS, (MUET, Pakistan)
Contract: Ms. Rosy Ilyas M.Phil., (UK)	Ms. Samra Memon MS, (MUET, Pakistan)
Lecturers: Ms. Farwa Thalho MPhil. (UoS, Pakistan)	Mr. Najay Chand Oad MS, (MUET, Pakistan)
Ms. Shazia Muheodin MS, (MUET, Pakistan) - **On Study Leave**	Mr. Masroor Ahmed Chandio MS, (MUET, Pakistan)
Dr. Ali Raza Khoso PhD, (UoS, Pakistan)	

4.15.5 LABORATORY FACILITIES:

The Centre of English Language and Linguistics (CELL) is equipped with the required facilities, tools, and equipment to conduct experiments in the field of English Linguistics. The following laboratories are available at the Centre of English Language and Linguistics (CELL), MUET, Jamshoro:

1. Self-Access Centre funded by HEC.	2. English Language Laboratory

4.15.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Theories of Language Description	(3+0)	100
2.	Applied Linguistics and Second Language Studies	(3+0)	100

3.	Globalization and spread of English	(3+0)	100
4.	Advance Academic Reading and Writing	(3+0)	100
Second Semester			
1.	Research Methodology in Applied Linguistics	(3+0)	100
2.	Data Handling and Analysis	(3+0)	100
3.	Digital Humanities	(3+0)	100
4.	Advance Language Testing and Evaluation	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis	6+0	00
2.	Elective-II	3+0	100			
Fourth Semester						
1.	Elective-III	3+0	100	Thesis	6+0	00
2.	Elective-IV	3+0	100			

- **The following is a list of elective courses:**

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
Third Semester (Elective Courses)			
1.	Critical Discourse Analysis	3+0	100
2.	Curriculum Development in Language Teaching	3+0	100
3.	Language Policy, Planning and Documentation	3+0	100
Fourth Semester (Elective Courses)			
1.	Language Teacher Education and Development	3+0	100
2.	Pedagogical Grammar	3+0	100
3.	Cross-Cultural Communication	3+0	100

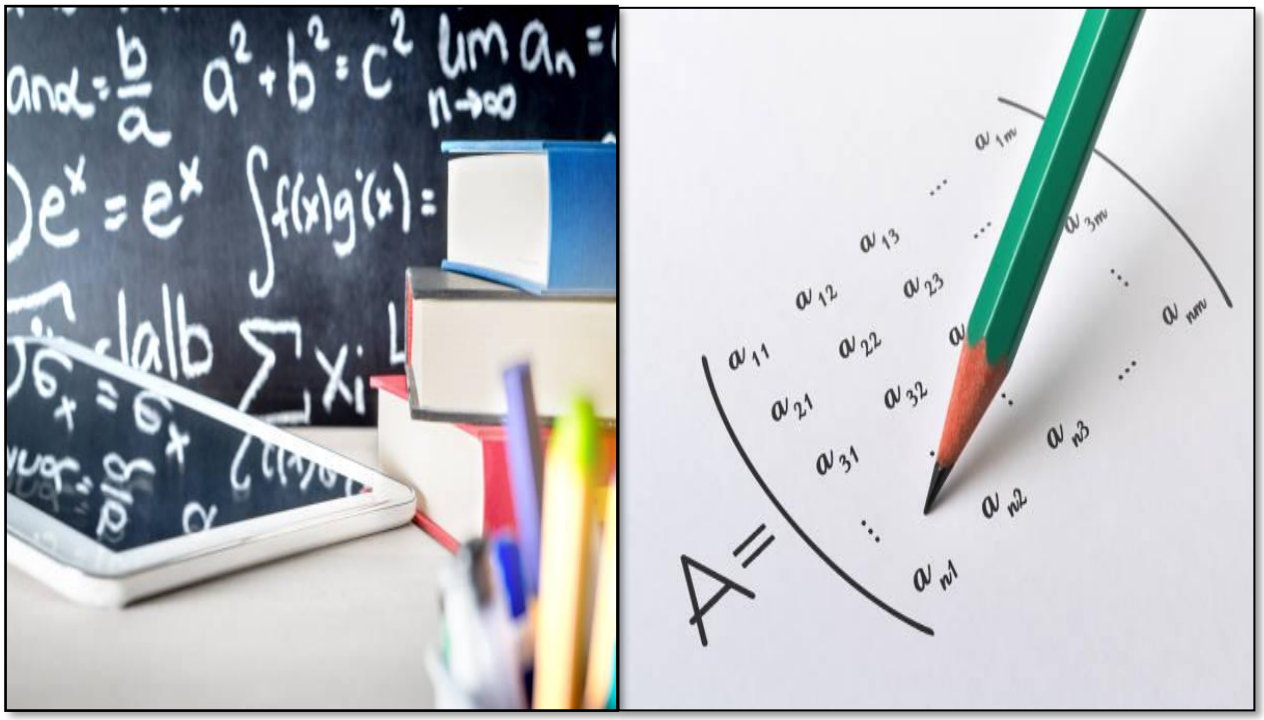
4.15.7 CAREER OPPORTUNITIES:

Graduates of the Master of Studies in English Linguistics program have diverse career opportunities in Pakistan and globally. They can excel as English language instructors, curriculum designers, academic coordinators, and researchers in higher education institutions. In Pakistan, the demand for professionals skilled in English Language Teaching (ELT) and Applied Linguistics is growing across universities, schools, language centers, and corporate training programs. They can also contribute to government initiatives, policy-making, and teacher training programs aligned with the Higher Education Commission's vision. Internationally, graduates can pursue roles as linguists, language consultants, and researchers in universities, think tanks, and research institutions. They are also well-suited for positions in multinational corporations, NGOs, publishing, and media, where expertise in English linguistics is critical for communication, content development, and language policy design. Furthermore, the program equips graduates for advanced research degrees, enabling them to achieve academic and professional excellence worldwide.

(B). DOCTORAL DEGREE PROGRAMS:

Mehran University of Engineering and Technology is currently offering the following PhD Degree Programs for the candidates of all over Pakistan:

1.	Applied Mathematics (PhD)	8.	Energy Systems Engineering (PhD)
2.	City & Regional Planning (PhD)	9.	Industrial Engineering & Management (PhD)
3.	Chemical Engineering (PhD)	10.	Manufacturing Engineering (PhD)
4.	Civil Engineering (PhD)	11.	Mechanical Engineering (PhD)
5.	Construction Management (PhD)	12.	Mining Engineering (PhD)
6.	PhD in Structural Engineering (PhD)	13.	Metallurgy & Materials Engineering (PhD)
7.	Geotechnical & Highway Engineering (PhD)	14.	Textile Engineering (PhD)



4.16 APPLIED MATHEMATICS (PH.D)

4.16.1 INTRODUCTION:

The Department offers PhD degree programs in the discipline of Applied Mathematics with in-depth knowledge of various aspects. It develops the capabilities of analysis, design, and implementation methods and Principles. The Applied Mathematics discipline addresses the key aspects of modern Applied Mathematics through integrated courses that meet the requirements of emerging markets of Professional Mathematicians at national and international levels. These courses are in conformance with the current and future needs of industries. To meet the latest technological trends, the department is equipped with state-of-the-art laboratories that maintain high standards through the latest hardware and software.

4.16.2 PROGRAM MISSION:

The program is committed to providing the latest scientific, mathematical, and technical knowledge and quantifiable research with a practical approach towards strengthening the positive changes in societal development.

4.16.3 PROGRAM OBJECTIVES:

The educational objectives of the PhD in (Applied Mathematics) degree program are:

i) To empower students with advanced theoretical knowledge and practical skills necessary for pioneering research in mathematics.
ii) To engage the students in advanced studies and research using modern software tools and techniques.
iii) To carry out original and scholarly research that contributes to the field of Applied Mathematics.

4.16.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Muhammad Mujtaba Shaikh PhD, (UoS, Pakistan)	Dr. Fozia Shaikh PhD, (MUET, Pakistan)

Meritorious Professor: Dr. Syed Feroz Shah PhD, (China)	Dr. Imran Qasim Memon PhD, (MUET, Pakistan)
Professor & Chairman: Dr. Asif Ali Shaikh PhD, (UoS, Pakistan)	Dr. Kashif Ali Abro PhD, (MUET, Pakistan)
Associate Professors: Dr. Sania Qureshi PhD, (UoS, Pakistan)	Mr. Hameer Akhter Abro M.Phil., (ISRA, Pakistan)
Dr. M. Mujtaba Shaikh PhD, (UoS, Pakistan)	Dr. Ayaz Ali Siyal PhD, (MUET, Pakistan)
Assistant Professors: Mr. Abdul Saleem Memon M.Phil., (UoS, Pakistan)	Dr. Ali Asghar Sangah PhD, (MUET, Pakistan)
Dr. Zaib Un Nisa Memon PhD, (Toronto, Canada)	Dr. Sara Mahesar PhD, (UoS, Pakistan)
Mr. Muhammad Urs Jhatial M.Phil., (UoS, Pakistan)	Dr. Prem Kumar PhD, (MUET, Pakistan)
Dr. Saima Qadri PhD, (MUET, Pakistan)	

4.16.5 LABORATORY FACILITIES:

The Department of BS&RS is equipped with the required facilities and equipment's to conduct Practical's in the field of Computational Mathematics. The following laboratories are available at the Department of BS&RS, MUET, Jamshoro:

1. Computer Lab	2. Modeling and Simulation Lab

4.16.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Semester-3 & onwards			
1.	MTH-899	Dissertation	30

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Modeling and Scientific Methods	3+0	100
2.	Research Methodology	3+0	100

3.	Advanced Numerical Analysis (Elective)	3+0	100
4.	Advances In Partial Differential Equations (Elective)	3+0	100
5.	Theory & Applications Of Transforms (Elective)	3+0	100
6.	Statistical Data Analysis (Elective)	3+0	100
7.	Advanced Operations Research (Elective)	3+0	100
8.	Applied Functional Analysis (Elective)	3+0	100
9.	Optimization Techniques (Elective)	3+0	100
10.	Non-Newtonian Fluid Mechanics (Elective)	3+0	100
11.	Advanced Linear Systems Theory (Elective)	3+0	100
12.	Any other approved relevant course	3+0	100

- **Research Credits:**

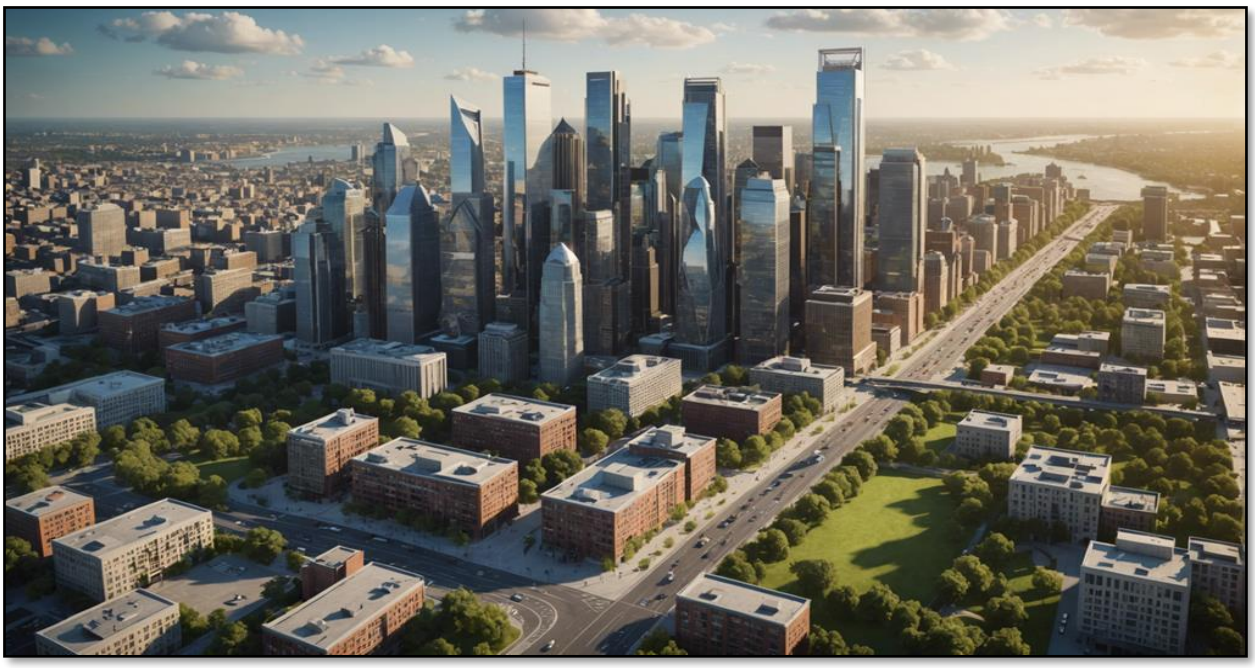
Sr. No.	Subjects	Credit Hours	Marks
1.	MTH-899	Dissertation	30

4.16.7 CAREER OPPORTUNITIES:

Mathematics graduates have many options for careers, including teaching as well as working in multiple disciplines. If you have an aptitude for pursuing a career in mathematics can be a rewarding decision after graduation. Students with an interest in mathematics have the opportunity to apply their degrees in a variety of ways after graduation. Employers often value mathematics graduates because Mathematical graduates are in high demand. The major career employments for Mathematics graduates are:

Mathematics teacher, Lecturer or Professor, Statistician, Accountant, Meteorologist, Data scientist, financial planner, and Research Analyst.

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4.17 CITY & REGIONAL PLANNING (PH.D)

4.17.1 INTRODUCTION:

The **PhD in City and Regional Planning (CRP)** at Mehran University of Engineering and Technology (MUET) is the pinnacle of academic and research excellence in the field of urban and regional planning in Pakistan. Housed within the Department of City and Regional Planning, a department with a long and distinguished history, this program is designed to produce the next generation of thought leaders, researchers, and policy-makers capable of addressing the complex, multifaceted challenges of 21st-century urbanization.

4.17.2 PROGRAM VISION & MISSION:

Vision: To be a nationally recognized center of excellence for advanced research in urban and regional planning, contributing to sustainable and resilient development in Pakistan and beyond.

Mission: To cultivate scholars who can generate original knowledge, develop innovative planning theories and practices, and provide sustainable solutions to urban and regional problems through rigorous research, critical thinking, and interdisciplinary collaboration.

4.17.3 PROGRAM OBJECTIVES:

The PhD program in CRP at MUET is designed to:

Cultivate Advanced Research Capability: To equip scholars with the ability to conduct original, independent, and rigorous research that addresses complex and emerging problems in urban and regional systems, using advanced quantitative, qualitative, and mixed-method research methodologies.

Generate New Knowledge and Theory: To advance the theoretical foundations of planning by contributing novel concepts, models, and frameworks that are contextually relevant to the Global South and Pakistan, while engaging with global scholarly discourse.

Develop Specialized Expertise: To produce graduates with deep, specialized knowledge in a niche area of planning (such as climate resilience, transport modeling, housing policy, or urban informatics), making them subject matter experts.

Foster Critical and Systems Thinking: To instill the ability to critically analyze the social, economic, environmental, and political dimensions of urban development, understanding their interconnections and anticipating the long-term consequences of planning interventions.

Enhance Scholarly Communication and Dissemination: To train candidates to effectively communicate complex research findings to diverse audiences through high-impact peer-reviewed publications, international conference presentations, and policy briefs.

Promote Ethical and Sustainable Practice: To embed a strong sense of professional and research ethics, with a commitment to promoting social equity, environmental sustainability, and participatory governance in urban and regional development.

Develop Leadership and Pedagogical Skills: To prepare graduates for leadership roles in academia, research, and public policy, including the ability to design curricula, mentor future planners, and lead multidisciplinary research teams.

Bridge the Gap Between Theory and Practice: To encourage applied research that translates theoretical insights into practical, evidence-based solutions, policy recommendations, and planning tools that can be implemented by government agencies, communities, and the private sector.

How These Objectives are Met:
Through the Dissertation: The primary vehicle for achieving these objectives is the mandatory, original dissertation, which embodies objectives i, ii, iii, and viii.

Through Coursework and Exams: The advanced coursework and comprehensive exams ensure a deep and critical understanding of the field (Objective iv).

Through Publication Requirement: The mandate to publish in an HEC-recognized journal directly fulfills Objective v.

Through Supervision and Seminars: Regular interaction with senior faculty and presentations at departmental seminars instill ethical research practices and leadership qualities (Objectives vi and vii).

In essence, the program's objectives are a roadmap for transforming a postgraduate student into an independent, ethical, and impactful scholar and leader in the field of City and Regional Planning.

Why Pursue a Ph.D. in CRP at MUET?
Pioneering Status: MUET has one of the oldest and most established planning departments in Pakistan, providing a rich academic heritage and a strong alumni network.

Research-Driven Focus: The program is exclusively focused on original research, moving beyond taught coursework to contribute new knowledge to the field.

Expert Faculty: Students work under the supervision of highly qualified and experienced faculty members with diverse specializations, including:

- Urban Design & Conservation
- Housing & Community Development
- Transportation Planning
- Environmental Planning & Sustainability
- GIS & Spatial Planning
- Regional & Development Planning
- Planning Policy & Governance

Contextual Relevance: The research is deeply embedded in the South Asian and Pakistani context, dealing with real-world issues like rapid urbanization, informal settlements, climate change vulnerability, infrastructure deficits, and heritage conservation.

Interdisciplinary Approach: The program encourages collaboration with other departments at MUET, such as Civil Engineering, Architecture, Environmental Engineering, and Water Resources, fostering a holistic research environment.

4.17.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Program Coordinator: Prof. Dr. Mir Aftab Hussain Talpur PhD, (Malaysia)	Dr. Irfan Ahmed Memon PhD, (Malaysia)
Professors: Prof. Dr. Mir Aftab Hussain Talpur PhD, (Malaysia)	**Assistant Professors:** Dr. Fahad Ahmed Shaikh PhD, (MUET, Pakistan)
Prof. Dr. Imtiaz Ahmed Chandio PhD, (Malaysia)	Dr. Muhammad Yousif Mangi PhD, (China)
Associate Professors: Dr. Saima Kalwar PhD, (Malaysia)	

4.17.5 LABORATORY FACILITIES:

The Department of City and Regional Planning is equipped with mandatory laboratory facilities and a seminar library. The students will be taught essential practical knowledge in these laboratories. The students will perform essential laboratory work under the supervision of trained and qualified faculty.

The following laboratories are available at the Department of City and Regional Planning, MUET, Jamshoro:

1.	Audio-Visual Lab.	5.	Environmental Physics & Services Lab.
2.	Computer Lab	6.	Surveying, Leveling, and Remote Sensing
3.	Graphic & Model Making Lab.	7.	Seminar Library
4.	Photographic Developing & Printing Lab.		

4.17.6 COURSES OFFERED:

Candidates have to choose only THREE courses of 9 CHs each in the 1st and 2nd Semesters, respectively.

Elective Subject List (PHD CRP) W.E.F 25 PHD CRP Batch & Onwards.

Subject	Th. (CH)	Pr. (H)	Subject	Th. (CH)	Pr. (CH)
Advanced Research Methods and Data Analysis	3	0	Economic Development and Regional Economics	3	0
Urban Theory and Planning History	3	0	GIS and Spatial Analysis	3	0
Sustainable Urban Development and Climate Resilience	3	0	Urban Design and Public Space Management	3	0

Transportation Planning and Smart Infrastructure System	3	0	Equity, Social Justice and Inclusive Planning	3	0
Housing Policy, Land Use and Urban Governance	3	0	Disaster Risk Management in Urban Planning	3	0
Statistical Methods	3	0	Ethics in Urban and Regional Planning	3	0

4.17.7 KEY RESEARCH AREAS:

The department encourages research in a wide array of fields, including but not limited to:

- Sustainable Urban Development & Smart Cities
- Climate Resilience and Disaster Risk Management
- Urban Informatics, GIS, and Remote Sensing Applications
- Transportation Policy and Sustainable Mobility
- Housing Studies and Real Estate Development
- Urban Governance, Institutions, and Finance
- Cultural Heritage Management and Tourism Planning
- Regional Economic Development and Planning
- Environmental Impact Assessment (EIA) and Management

4.17.8 CAREER PROSPECTS:

Graduates of the PhD in CRP from MUET are equipped for high-level careers in:

Academia: As university professors and researchers.
Research & Development: In national and international think tanks (e.g., UNDP, World Bank, Asian Development Bank).
Public Sector: As senior policy advisors, consultants, and directors in federal and provincial planning and development departments.
Private Sector: As lead consultants and experts in premier national and international urban planning and development consultancies.

4.17.9 CONCLUSION:

The PhD in City and Regional Planning at Mehran University is more than just a degree; it is a commitment to advancing the science and art of planning. It is designed for passionate individuals who wish to delve deep into the urban challenges of our time and emerge as the innovators and leaders who will shape the sustainable, equitable, and resilient cities of the future.




4.18 CHEMICAL ENGINEERING (PH.D)

4.18.1 INTRODUCTION:

The postgraduate program in Chemical Engineering started back in 1980. The Chemical Engineering Department strongly believes in collaboration with national and international HEIs. It has actively contributed to developing connections with Brunel University, UK, the University of Exeter, UK, and the University of Arizona, United States. More than 90% of the faculty members hold PhD degrees and are actively engaged in diverse research areas.

4.18.2 PROGRAM MISSION:

To provide sound research and learning environment to doctoral students and enabling them to realize the frequently changing trends of chemical engineering with the purpose of their socio-economic, ethical and professional growth.

4.18.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Chemical Engineering degree program are:

i). To prepare the doctoral students with excellent advanced education and skills in the field of Chemical Engineering.
ii). To enable the doctoral students to carryout advanced research for the solutions of industrial problems in the field of Chemical Engineering.
iii). To aware the doctoral students regarding professional and research ethics, and to provide knowledge on advanced scientific writing.

4.18.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Chairman: Dr. Inamullah Bhatti PhD, (Malaysia)	Dr. Masroor Ahmed Abro PhD, (China)
Meritorious Professors: Dr. Khadija Qureshi PhD, (MUET, Pakistan)	Dr. Zulfiqar Ali Bhatti PhD, (MUET, Pakistan)
Dr. Zeenat M. Ali PhD, (MUET, Pakistan)	Dr. Khan Muhammad Qureshi PhD, (Malaysia)
Dr. Aziza Aftab PhD, (MUET, Pakistan)	Dr. Sikandar Mustafa Almani PhD, (France)

Associate Professors: Dr. M. Shuaib Shaikh PhD, (Malaysia)	**Assistant Professor:** Dr. Zulfiqar Ali Solangi PhD, (MUET, Pakistan)
Dr. Imran Nazir Unar PhD, (MUET, Pakistan)	

4.18.5 COURSES OFFERED:

The following is the list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modelling and Simulation	(3+0)	100
2.	Research Methodology	(3+0)	100
3.	Adsorption Separation Processes	(3+0)	100
4.	Advanced Biochemical Engineering techniques	(3+0)	100
5.	Advanced Separation Processes	(3+0)	100
6.	Biogas Production and Utilization	(3+0)	100
7.	Computational Fluid Dynamics Modeling and Simulation	(3+0)	100
8.	Kinetics of Coal Gasification	(3+0)	100
9.	Membrane separation processes	(3+0)	100
10.	Water and Waste Water Treatment Technology	(3+0)	100
11.	Statistical Thermodynamics for Chemical Engineering	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
4.	Elective-IV	(3+0)	100
5.	Elective-V	(3+0)	100
6.	Elective-VI	(3+0)	100

4.18.6 CAREER OPPORTUNITIES:

Graduates of the PhD in Chemical Engineering program are equipped to excel in diverse roles across industries and research. They can lead process optimization and management in sectors like oil and gas, petrochemicals, pharmaceuticals, and renewable energy. Opportunities also exist in environmental and sustainability consulting, where they contribute to waste management, pollution control, and eco-friendly process design.

The program prepares graduates for advanced research roles, driving innovation in emerging areas such as nanotechnology, material science, and green technologies. With a strong focus on problem-solving and technical expertise, graduates are well-suited for leadership positions in R&D, academia, and industrial consultancy.

Whether advancing sustainable development goals or improving industrial efficiency, ME graduates are at the forefront of creating solutions for today's global challenges.



4.19 CIVIL ENGINEERING (PH.D)

4.19.1 INTRODUCTION:

The Department of Civil Engineering at MUET is the cornerstone of innovation for the built and natural environment. We are dedicated to educating the next generation of civil engineering leaders at the Doctoral levels, equipping them to tackle the grand challenges of the 21st century, from sustainable infrastructure and resilient cities of water security and environmental stewardship.

The PhD in Civil Engineering program is a transformative journey designed to cultivate not just highly competent engineers but visionary professionals. We provide a rigorous, dynamic learning environment that emphasizes advanced research, cutting-edge problem-solving, and collaborative leadership. Our graduates are prepared to ascend to the highest echelons of the industry, pioneer new knowledge through doctoral studies, and lead with integrity in shaping a sustainable, resilient, and prosperous future for Pakistan and the world.

4.19.2 PROGRAM MISSION:

The mission of the Civil Engineering program is to provide a state-of-the-art education grounded in advanced scientific, mathematical, and technical knowledge. We cultivate engineers with the expertise to analyze, design, and synthesize complex systems, the ability to communicate effectively, and a steadfast commitment to professional ethics. Our ultimate goal is to empower graduates who will drive innovation, strengthen national industry, and lead the sustainable development of our communities.

4.19.3 PROGRAM OBJECTIVES:

The objectives of PhD in Civil Engineering degree program are:

i). To prepare the graduates with excellent advanced education and skills in Civil Engineering.
ii). To involve the students in research on applied civil engineering.
iii). To motivate and direct professional engineers through various streams of specialization in Civil Engineering.

4.19.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Fareed Ahmed Memon PhD, (Malaysia)	Dr. Zaheer Almani PhD, (UK)

Meritorious Professor: Dr. Tauha Hussain Ali PhD, (Australia)	Dr. Naeem Aziz Memon PhD, (UK) - On Lien
Dr. Aneel Kumar PhD, (Japan)	Dr. Irfan Ahmed Memon PhD, (Malaysia)
Professor: Dr. Rizwan Ali Memon PhD, (MUET, Pakistan)	**Assistant Professor:** Dr. Ali Raza Khoso PhD, (Malaysia)
Dr. Nafees Ahmed Memon PhD, (Romania)	Dr. M. Rehan Hakro PhD, (MUET, Pakistan)
Dr. Agha Faisal Habib PhD, (UK)	Dr. Maroosha Larik PhD, (MUET, Pakistan)

4.19.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Sustainable Construction management	(3+0)	100
2.	Cost Analysis and Control	(3+0)	100
3.	Lean Construction and Resource Management	(3+0)	100
4.	Decision-Making Tools for Construction Management	(3+0)	100
5.	IT in Construction	(3+0)	100
6.	Construction Quality and Productivity Management	(3+0)	100
7.	Supply Chain Management in Construction	(3+0)	100
8.	Advanced Building Construction Materials	(3+0)	100
9.	Design and Construction of High-Rise Buildings	(3+0)	100
10.	Repair and Retrofitting of Concrete Structures	(3+0)	100
11.	Design and Construction of Structural Foundations	(3+0)	100
12.	Modelling Methods in Geomechanics	(3+0)	100
13.	Geotechnical Site Investigation	(3+0)	100
14.	Advanced Soil Dynamics	(3+0)	100
15.	Geotechnical Engineering of Dams	(3+0)	100
16.	Pavement Construction Equipment Management	(3+0)	100
17.	Smart and Sustainable Pavement Materials	(3+0)	100
18.	Pavement Design	(3+0)	100
19.	Geometric Design of Highways	(3+0)	100
20.	Advanced Urban Transportation Planning Methods	(3+0)	100
21.	Advanced Traffic Engineering and Management	(3+0)	100
22.	Public Transportation Systems	(3+0)	100
23.	Transport Economics and Project Evaluation	(3+0)	100
24.	Logistics and Supply Chain Management	(3+0)	100
25.	Geotechnical Aspects of Landfill Design and Construction	(3+0)	100
26.	Rock Mechanics and Foundations	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.19.6 CAREER OPPORTUNITIES:

The graduates of the PhD in Civil Engineering program have diverse career opportunities in government, non-government and private sectors. The graduates have many opportunities for placement in various civil engineering projects within the country and abroad. They are employed in the civil engineering industry's planning, management, field investigations, surveys, structural modelling, implementation, repair and maintenance phases. Besides, PhD graduates have a large scope in academia, research and development. Being highly educated civil engineering professionals, the graduates can get lead positions in national and multinational companies within and outside the country.



4.20 CONSTRUCTION MANAGEMENT (PH.D)

4.20.1 INTRODUCTION:

The PhD in Construction Management transforms graduate civil engineers into strategic leaders who can specialize in the complexities of modern construction. This program seamlessly integrates deep technical expertise with advanced business and managerial acumen, creating professionals equipped to not only navigate but also redefine the future of the built environment.

Our curriculum is a direct response to the evolving demands of the global construction sector. Through a rigorous focus on strategic project planning, financial stewardship, risk mitigation, and sustainable practices, students learn to leverage cutting-edge technologies for efficient and innovative project delivery.

Graduates emerge as visionary leaders, prepared to drive organizational excellence, contribute significantly to economic growth and national infrastructure, and champion sustainable development principles on a global scale. Whether their path leads to executive leadership, high-level consultancy, or academia, they are equipped to build a more resilient and prosperous future.

4.20.2 PROGRAM MISSION:

The PhD in Construction Management program aims to enhance the knowledge of graduate civil engineers in the specialized area of construction management. It intends to provide construction management education with advanced knowledge and skills suitable to the needs and aspirations of the construction industry, contributing to the development and economic prosperity of the country.

4.20.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Construction Management degree program are:

i). To prepare the students with advanced education and skills in construction management.
ii). To involve the students in applied construction management.
iii). To enhance the capabilities of graduate engineers to contribute in the development of the construction industry.

4.20.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator:	**Shared Faculty:**
Dr. Nafees Ahmed Memon PhD, (Romania)	Prof. Dr. Mir Aftab Talpur PhD, (Malaysia)

Meritorious Professor: Dr. Tauha Hussain Ali PhD, (Australia)	Dr. Irfan Ahmed Memon PhD, (Malaysia)
Assistant Professor: Dr. Ali Raza Khoso PhD, (Malaysia)	Dr. Miskeen Gopang PhD, (Pakistan)
Dr. Anees Ahmed Vighio PhD, (Malaysia)	

4.20.5 COURSES OFFERED:

The list of elective courses to be taught after appropriate selection in each semester for PhD Construction Management Program is shown in Table below.

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modelling and Simulation	(3+0)	100
2.	Research Methodology	(3+0)	100
3.	Sustainable Construction management	(3+0)	100
4.	Cost Analysis and Control	(3+0)	100
5.	Lean Construction and Resource Management	(3+0)	100
6.	Decision-Making Tools for Construction Management	(3+0)	100
7.	IT in Construction	(3+0)	100
8.	Construction Quality and Productivity Management	(3+0)	100
9.	Supply Chain Management in Construction	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.20.6 CAREER OPPORTUNITIES:

Graduates of the PhD in Construction Management program enjoy diverse career opportunities across the construction industry and beyond. They can take on leadership roles such as project manager, construction manager, or site manager, overseeing complex projects from initiation to completion. Cost and resource management opportunities include roles like cost estimator, quantity surveyor, and procurement manager, ensuring financial efficiency and optimal resource allocation. Graduates may also excel as planning engineers driving project timelines and resource alignment. Specialized roles include Building Information Modelling (BIM) Manager and Construction Technology Specialist, focusing on advanced tools related to project management. Careers in quality and safety, such as quality control manager and safety manager, ensure compliance with standards and protocols. Additionally, advanced knowledge of construction management principles help graduates to provide innovative and sustainable solutions for the continuous development of industry.



4.21 STRUCTURAL ENGINEERING (PH.D)

4.21.1 INTRODUCTION:

The PhD in Structural Engineering is an advanced graduate program designed to deepen expertise in the analysis, design, and innovation of built structures. Recognizing diverse career ambitions, the program offers two specialized streams: a course-intensive track for specializing advanced professional practice, and a research-focused track for pioneering new knowledge.

4.21.2 PROGRAM MISSION:

The mission of the PhD in Structural Engineering program is to cultivate expert engineers and innovators through an advanced, practice-oriented education. We empower graduates with the technical mastery and creative problem-solving skills to design resilient, sustainable and safe structural solutions that meet both local challenges and global standards, driving responsible progress in the built environment.

4.21.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Structural Engineering degree program are:

i). **Develop Expertise:** Equip students with in-depth knowledge and technical skills in Structural Engineering.
ii). **Research Skills:** Encourage research and innovation in construction practices and technologies.
iii). **Industry Readiness:** Prepare engineers to become industry leaders capable of implementing best structural engineering practices.

4.21.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Aneel Kumar PhD, (Japan)	Dr. Zaheer Ahmed Almani PhD, (UK)

Meritorious Professor: Dr. Aneel Kumar PhD, (Japan)	Dr. Fareed Ahmed Memon PhD, (Malaysia)
Professors: Dr. Rizwan Ali Memon PhD, (MUET, Pakistan)	**Assistant Professor:** Dr. M. Rehan Hakro PhD, (MUET, Pakistan)
Dr. Nafees Ahmed Memon PhD, (Romania)	**Lecturer:** Dr. Maroosha Larik PhD, (MUET, Pakistan)

4.21.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Advanced Building Construction Materials	(3+0)	100
2.	Design and Construction of High-Rise Buildings	(3+0)	100
3.	Repair and Retrofitting of Concrete Structures	(3+0)	100
4.	Design and Construction of Structural Foundations	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.21.6 CAREER OPPORTUNITIES:

Structural engineering offers a wide range of career opportunities. Structural engineers work on projects involving the following roles:

- **Structural Engineer:** Designing and analyzing structures to ensure they are safe and stable.
- **Project Engineer:** Overseeing structural aspects of construction projects from start to finish.
- **Consulting Engineer:** Providing expert advice on structural design and construction.
- **Design Engineer:** Creating detailed structural designs using CAD software.
- **Site Engineer:** Managing construction sites and ensuring structural integrity during building.
- **Bridge Engineer:** Specializing in the design and maintenance of bridges.

These roles are available in various sectors, including construction companies, engineering consultancies, government agencies, and research institutions. Specialization in the area of structural engineering provide a sound base to graduates to contribute towards sustainable design solutions for buildings and infrastructure.



4.22 GEOTECHNICAL & HIGHWAY ENGINEERING (PH.D)

4.22.1 INTRODUCTION:

The PhD in Geotechnical and Highway Engineering is a specialized graduate program designed for civil engineers ready to master the very foundation of modern infrastructure: the ground itself. This program provides advanced expertise in designing, analyzing, and building the resilient earthworks and transportation networks that underpin economic development and societal progress.

4.22.2 PROGRAM MISSION:

The mission of the PhD in Geotechnical and Highway Engineering program is to develop engineering leaders who master the intersection of the earth and infrastructure. We provide an advanced, practice-oriented education that empowers graduates to design, build, and innovate resilient, sustainable, and safe foundations and transportation systems, addressing both regional challenges and global standards.

4.22.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Geotechnical and Highway Engineering degree program are:

i). **Develop Expertise:** Equip students with in-depth knowledge and technical skills in Geotechnical and Highway Engineering.
ii). **Research Skills:** Encourage research and innovation in construction practices and technologies.
iii). **Industry Readiness:** Prepare engineers to become industry leaders capable of implementing best geotechnical and highway engineering practices.

4.22.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Agha Faisal Habib PhD, (UK)	Dr. Zaheer Ahmed Almani PhD, (UK)

Meritorious Professor: Dr. Aneel Kumar PhD, (Japan)	Dr. Naeem Aziz Memon PhD, (UK) - On Lien
Professor: Dr. Rizwan Ali Memon PhD, (MUET, Pakistan)	Dr. Irfan Ahmed Memon PhD, (Malaysia)
Dr. Agha Faisal Habib PhD, (UK)	**Assistant Professor:** Dr. Muhammad Rehan Hakro PhD, (MUET, Pakistan)

4.22.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Modelling Methods in Geomechanics	(3+0)	100
2.	Geotechnical Site Investigation	(3+0)	100
3.	Advanced Soil Dynamics	(3+0)	100
4.	Geotechnical Engineering of Dams	(3+0)	100
5.	Pavement Construction Equipment Management	(3+0)	100
6.	Smart and Sustainable Pavement Materials	(3+0)	100
7.	Pavement Design	(3+0)	100
8.	Geometric Design of Highways	(3+0)	100
9.	Advanced Urban Transportation Planning Methods	(3+0)	100
10.	Advanced Traffic Engineering and Management	(3+0)	100
11.	Public Transportation Systems	(3+0)	100
12.	Transport Economics and Project Evaluation	(3+0)	100
13.	Logistics and Supply Chain Management	(3+0)	100
14.	Geotechnical Aspects of Landfill Design and Construction	(3+0)	100
15.	Rock Mechanics and Foundations	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.22.6 CAREER OPPORTUNITIES:

There are plenty of career opportunities in Geotechnical and Highway Engineering. Geotechnical engineers work on soil and rock mechanics, foundation design, and earthworks projects. They are crucial in ensuring the stability and safety of structures. Career opportunities include:

i). **Geotechnical Engineer:** Working on construction sites and infrastructure projects.
ii). **Project Engineer:** Overseeing geotechnical aspects of construction projects.
iii). **Consulting Engineer:** Providing expert advice on soil and foundation issues.

Highway engineers focus on designing, constructing, and maintaining roadways and transportation systems. They ensure safe and efficient travel for vehicles. Career opportunities include:

- **Highway Engineer:** Designing and overseeing the construction of highways and roads.
- **Project Manager:** Managing highway construction projects from start to finish.
- **Traffic Engineer:** Ensuring road safety and efficient traffic flow.



4.23 ENERGY SYSTEM ENGINEERING (PH.D)

4.23.1 INTRODUCTION:

Energy is vital for economic growth and improving quality of life, with per capita energy consumption reflecting socio-economic development. Pakistan faces severe energy challenges, including, energy planning, supply-demand gaps, low consumption rates, depleting oil and gas reserves, high-energy costs, and environmental concerns. These issues exacerbate unemployment, poverty, and industrial stagnation. Addressing them requires skilled energy engineers to develop innovative, environmentally sustainable solutions and ensure reliable energy systems. To meet this need, Department of Mechanical Engineering, MUET, Jamshoro is offering PhD program in Energy Systems Engineering. This program focus on teaching and research to address energy challenges like efficient resource utilization and environmental protection.

4.23.2 PROGRAM MISSION:

The PhD Program of Energy Systems Engineering emphasizes on the solving of Energy System engineering problems related to the fast and sustainable development in Pakistan with advance theoretical, experimental and mathematical knowledge needed in the energy sector globally and locally.

4.23.3 PROGRAM OBJECTIVES:

The educational objectives of the PhD program in Energy System Engineering are to prepare engineers/researchers:

i) Who can add value to organizations/industries through the analysis, evaluation, and improvement of quality and efficiency of energy systems and processes using appropriate engineering tools and techniques.
ii) Having necessary skills needed to innovative solutions of the complex problems/ challenges by conducting research.
iii). Having strong communication, management and leadership skills to lead projects teams.

4.23.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program PhD in Energy Systems Engineering:

Professor and Chairman: Dr. Tanweer Hussain PhD, (UK)	Dr. Masroor Ahmed Abro PhD, (China)

Professor Emeritus: Dr. Mohammad Aslam Uqaili PhD, (UK)	Dr. Pervez Hameed Shaikh PhD, (Malaysia)
Meritorious Professor & Program Coordinator: Dr. Khanji Harijan PhD, (MUET, Pakistan)	**Assistant Professors:** Dr. Mansoor Ahmed Soomro PhD, (MUET, Pakistan)
Professors: Dr. Rizwan Ahmed Memon PhD, (Hong Kong)	Dr. Shoaib Ahmed Khatri PhD, (MUET, Pakistan)
Dr. Syed Asif Ali Shah PhD, (Austria)	Dr. Laveet Kumar - On Lien PhD, (Malaysia)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	Dr. Samiullah Qureshi PhD, (MUET, Pakistan)
Dr. Tanweer Hussain PhD (UK)	**Lecturers:** Dr. Ans Ahmed Memon PhD, (MUET, Pakistan)
Associate Professors: Dr. Nayyar Hussain Mirjat PhD, (MUET, Pakistan) (On Lien)	Dr. Hafeez Khoharo PhD, (Malaysia)
Dr. Faheem Ullah Shaikh PhD, (China)	Dr. Roshan Kumar PhD, (Malaysia)
Dr. Muhammad Shuaib Shaikh PhD, (Malaysia)	

4.23.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subject	Credit Hours	Marks
1.	Research Methodology	(3+0)	100
2.	Mathematical Modeling & Simulation	(3+0)	100
3.	Energy Resources, Economics and Management	(3+0)	100
4.	Advanced Thermal Power Cycles	(3+0)	100
5.	Exergy Analysis	(3+0)	100
6.	Biogas Production & Utilization	(3+0)	100
7.	Materials for Renewable and Sustainable Energy	(3+0)	100
8.	Wind Energy Conversion Systems	(3+0)	100
9.	Energy Policy and Planning	(3+0)	100
10.	Solar Energy Systems	(3+0)	100
11.	Biomass Energy Technology	(3+0)	100
12.	Energy Efficiency in Buildings	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100

2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.23.6 CAREER OPPORTUNITIES:

A PhD in Energy Systems Engineering offers career opportunities in academia as professors or researchers, in research and development with national labs or industries, in the public sector with government agencies or policy-making bodies, and in the private sector with energy companies, consultancies, or industries focused on renewable energy, energy efficiency, and smart grids, with roles such as Energy Systems Engineer, Renewable Energy Specialist, Energy Policy Analyst, or Sustainability Consultant.



4.24 INDUSTRIAL ENGINEERING AND MANAGEMENT (PH.D)

4.24.1 INTRODUCTION:

Industrial Engineering and Management (IEM) is a dynamic and interdisciplinary field that emphasizes the design, improvement, and optimization of complex systems integrating people, materials, machines, and technology. By leveraging advanced knowledge from mathematical, physical, and social sciences, along with cutting-edge engineering principles, IEM distinguishes itself through a seamless blend of engineering and management disciplines. This unique combination equips professionals to address real-world challenges across various industries. The department is equipped with state-of-the-art laboratories and training facilities, including Operations Research, Vicon Motion Capture System, Additive Manufacturing, Condition Monitoring, and Computer Integrated Manufacturing Laboratories.

Recognizing the growing significance of Industrial Engineering and Management on both national and global scales, the department has expanded its offerings to include postgraduate programs (ME and PhD). This strategic decision aims to develop professionals capable of driving innovation, operational excellence, and sustainable industrial growth.

4.24.2 PROGRAM MISSION:

The mission of PhD in Industrial Engineering and Management program is to produce individuals to function as independent researchers who can take an interdisciplinary approach to manufacture and service industry issues. Students graduating with this degree are prepared for careers as research scientists, university educators or specialized professionals within the field of industrial engineering.

4.24.2 PROGRAM OBJECTIVES:

The objectives of the PhD in Industrial Engineering and Management degree program are to develop industrial engineering professionals who will:

i). Contribute to the success of engineering industries by researching the advancement of industrial engineering knowledge and practices.

ii). Integrate industrial engineering knowledge within the broad social, ethical, and economic contexts to influence the strategic direction of engineering policy institutions and organizations.

iii). Be fully qualified to conduct publishable scholarly research in all functional areas of industrial engineering and management.

4.24.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor and Chairman: Dr. Muhammad Saleh Jumani PhD, (UK)	Dr. Sonia Mari PhD, (Korea)
Professor: Dr. Abdul Salam Soomro PhD, (MUET, Pakistan)/(UTM, Malaysia)	Dr. Muhammad Saad Memon PhD, (Korea)
Associate Professors: Dr. Shakeel Ahmed PhD, (UK)	**Assistant Professor:** Dr. Miskeen Ali Gopang PhD, (MUET, Pakistan)

4.24.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Entrepreneurship Developments	(3+0)	100
2.	Business Forecasting	(3+0)	100
3.	Advanced Manufacturing Systems	(3+0)	100
4.	Project Quality Management	(3+0)	100
5.	Supply Chain Analytics	(3+0)	100
6.	Robotics and Industrial Automation	(3+0)	100
7.	Lean and Green Practices	(3+0)	100
8.	Humanitarian Supply Chain Management	(3+0)	100
9.	Industrial Safety and Environment	(3+0)	100
10.	Mathematical Modelling and Simulation	(3+0)	100
11.	Research Methodology	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.24.6 CAREER OPPORTUNITIES:

A PhD in Industrial Engineering and Management opens diverse career paths across academia, industry, research, consulting, and government sectors. Graduates can pursue academic and research roles as university professors, postdoctoral researchers, or research scientists, contributing to innovation and knowledge creation. In the industrial and corporate sector,

opportunities include positions like industrial engineering manager, operations manager, quality assurance director, and supply chain executive, focusing on improving efficiency, productivity, and systems performance. In consulting and management, PhD holders can work as management or process improvement consultants, project managers, or operations strategists, helping organizations optimize processes and implement modern management practices.

There are also growing roles in technology and innovation, such as automation experts, AI/ML specialists, and product development engineers, driven by Industry 4.0 trends. Additionally, they can serve in government and policy roles as advisors or R&D program managers influencing industrial and technology policies.

Finally, entrepreneurial-minded graduates can establish start-ups or work as innovation consultants, while emerging areas like sustainability and ergonomics offer opportunities to design eco-friendly and human-centered industrial systems.

In summary, a PhD in IEM equips professionals for leadership roles in research, academia, industry, and innovation, enabling them to shape the future of efficient, data-driven, and sustainable industrial systems.



4.25 MANUFACTURING ENGINEERING (PH.D)

4.25.1 INTRODUCTION:

The Department of Mechanical Engineering at MUET is dedicated to advancing the science, technology, and innovation that drive modern industrial systems. With a focus on smart manufacturing, advanced materials processing, automation, robotics, sustainable production, and digital transformation, the department prepares doctoral scholars to push the boundaries of manufacturing engineering excellence.

The PhD in Manufacturing Engineering program offers a rigorous research environment where scholars explore cutting-edge solutions to complex manufacturing challenges. The program emphasizes originality, analytical depth, innovation-driven problem-solving, and interdisciplinary collaboration. Its doctoral scholars emerge as influential researchers, educators, and industry leaders capable of shaping high-performance, efficient, and sustainable manufacturing systems in Pakistan and across the globe.

4.25.2 PROGRAM MISSION:

The mission of the PhD in Manufacturing Engineering program is to provide world-class research training grounded in advanced scientific, technological, and industrial knowledge. We aim to cultivate scholars who can develop, optimize, and innovate manufacturing processes and systems; who communicate technical insights effectively; and who uphold the highest standards of professionalism and ethics. The program aspires to produce visionary researchers and leaders who will strengthen national industries, drive technological modernization, and contribute to sustainable, competitive manufacturing capabilities.

4.25.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Manufacturing Engineering program are:

i) To prepare doctoral scholars with advanced theoretical, analytical, and technological expertise in modern and emerging areas of manufacturing engineering.
ii) To engage doctoral scholars in high-impact, application-oriented research that advances manufacturing processes, systems, and technologies.
iii) To motivate and guide doctoral scholars to excel in diverse manufacturing specializations, fostering innovation, leadership, and continuous scientific growth.

4.25.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program PhD (Manufacturing Engineering)

Chairman & Program Coordinator: Dr. Tanweer Hussain PhD, (UK)	Dr. Saad Memon PhD, (Korea)
Professor: Dr. Rizwan Ahmed Memon PhD, (Hong Kong)	Dr. Saifullah Samo PhD, (China)
Dr. Jawaid Daudpoto PhD, (UK)	**Assistant Professor:** Dr. Intizar Ali Tunio PhD, (MUET Pakistan)
Dr. Tanweer Hussain PhD, (UK)	**Lecturer:** Dr. Hafeez Khoharo PhD, (Malaysia)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	Dr. Roshan Kumar PhD, (Malaysia)
Associate Professor: Dr. Shakeel Ahmed Shaikh PhD, (Korea)	

4.25.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Research Methodology	(3+0)	100
2.	Mathematical Modeling & Simulation	(3+0)	100
3.	Synthesis and Design of Nano-materials	(3+0)	100
4.	Surface Engineering	(3+0)	100
5.	Advanced Manufacturing Systems	(3+0)	100
6.	Robotics and Industrial Automation	(3+0)	100
7.	Industrial Safety and Environment	(3+0)	100
8.	Entrepreneurship Development	(3+0)	100
9.	Sustainable and Green Manufacturing	(3+0)	100
10.	Lean and Agile Manufacturing	(3+0)	100
11.	Life Cycle Assessment	(3+0)	100
12.	Design of Engineering Materials	(3+0)	100

4.25.6 CAREER OPPORTUNITIES:

Career Prospects for PhD in Manufacturing Engineering include but are not limited to:

- **Academia:** Teaching and research positions in manufacturing and allied engineering departments.
- **Research & Development:** Senior researcher roles in global corporate R&D centres, advanced manufacturing labs, and technology parks.
- **Public Sector:** Technical advisors and experts in ministries of industries, science & technology, and industrial or economic development agencies.
- **Private Sector & Manufacturing Industry:** Lead manufacturing engineer opportunities such as production managers, quality engineers, and process improvement specialists in diverse manufacturing industries.
- **High-Tech & Emerging Industries:** Leadership roles in advanced manufacturing, automation, digital production, and emerging sectors including semiconductors, robotics, EVs, biomedical devices, and Industry 4.0 technologies.



4.26 MECHANICAL ENGINEERING (PH.D)

4.26.1 INTRODUCTION:

The Department of Mechanical Engineering at MUET is a hub of innovation and technological advancement, committed to developing the next generation of engineering researchers and leaders. With strengths in advanced materials, thermal and fluid sciences, robotics, manufacturing, and renewable energy, the department fosters a forward-thinking environment grounded in scientific rigor and practical relevance.

The PhD in Mechanical Engineering program provides a transformative research experience for scholars who seek to expand engineering knowledge and develop solutions to complex real-world challenges. The program emphasizes originality, critical analysis, cutting-edge problem-solving, and interdisciplinary collaboration.

Our doctoral scholars emerge as capable researchers and visionary professionals; prepared to lead in academia, industry, and research organizations, while contributing to a more innovative, efficient, and sustainable future for Pakistan and the global community.

4.26.2 PROGRAM MISSION:

The mission of the Mechanical Engineering PhD program is to deliver cutting-edge education and research training rooted in advanced scientific, mathematical, and technological principles. We strive to develop scholars who can investigate, model, and innovate complex mechanical systems; who communicate their ideas with clarity and impact; and who uphold the highest standards of professional integrity. The program aims to produce visionary researchers and leaders who will drive technological advancement, strengthen national industries, and contribute to sustainable, efficient, and globally competitive engineering solutions for society.

4.26.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Mechanical Engineering program are:

i). To equip doctoral scholars with advanced theoretical knowledge and specialized skills across core and emerging areas of Mechanical Engineering.

ii). To engage doctoral scholars in high-impact research aimed at solving complex engineering problems and contributing new knowledge to the field.

iii). To prepare and guide doctoral scholars to excel in diverse areas of specialization, fostering innovation, leadership, and lifelong scholarly growth.

4.26.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the PhD program in Mechanical Engineering:

Professor and Chairman: Dr. Tanweer Hussain PhD, (UK)	**Assistant Professor:** Dr. Laveet Kumar (On Lien) PhD, (Malaysia)
Meritorious Professor Dr. Khanji Harijan PhD, (MUET, Pakistan)	Dr. Intizar Ali Tunio PhD, (MUET Pakistan)
Professor: Dr. Rizwan Ahmed Memon PhD, (Hong Kong)	Dr. Samiullah Qureshi PhD, (MUET, Pakistan)
Dr. Tanweer Hussain PhD, (UK)	**Lecturer:** Dr. Ans Ahmed Memon PhD, (MUET, Pakistan)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	Dr. Hafeez Khoharo PhD, (Malaysia)
Associate Professor: Dr. Saifullah Samo PhD, (China)	Dr. Roshan Kumar PhD, (Malaysia)

4.26.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Research Methodology	(3+0)	100
2.	Mathematical Modeling & Simulation	(3+0)	100
3.	Sustainable and Green Manufacturing	(3+0)	100
4.	Lean and Agile Manufacturing	(3+0)	100
5.	Wind Energy Conversion Systems	(3+0)	100
6.	Life Cycle Assessment	(3+0)	100
7.	Computational Fluid Dynamics Modeling & Simulation	(3+0)	100
8.	Energy Efficiency in Buildings	(3+0)	100
9.	Advanced Thermal Power Cycles	(3+0)	100
10.	Exergy Analysis	(3+0)	100
11.	Solar Energy Systems	(3+0)	100
12.	Robotics and Industrial Automation	(3+0)	100
13.	Design of Engineering Materials	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100

2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.26.6 CAREER OPPORTUNITIES:

Career Prospects for PhD in Mechanical Engineering include but are not limited to:

- **Academia:** University faculty roles and research leadership positions, including supervisors and principal investigators in mechanical and allied engineering departments.
- **Research & Development:** Senior research positions and R&D roles in aerospace, automotive, energy, and robotics industries within national and international institutes.
- **Public Sector:** Technical experts, advisors, and directors in ministries, regulatory bodies, and national infrastructure or energy projects.
- **Private Sector & Industry:** Lead mechanical engineers, design specialists, and consultants in manufacturing, HVAC, energy, and industrial automation firms.
- **High-Tech & Emerging Industries:** Innovation roles in advanced fields such as additive manufacturing, digital twins, smart systems, and sustainable energy technologies.



4.27 MINING ENGINEERING (PH.D)

4.27.1 INTRODUCTION:

Mining is the second earliest endeavor of human civilization, with agriculture being the first. These two industries held crucial roles as the primary or basic industries of early civilization. The mineral sector consistently plays a vital role in the industrial development and economic growth of nations. Pakistan is naturally endowed with ample mineral wealth, which should be profitably exploited to enhance national wealth and foster self-reliance. The demand for minerals of all kinds is higher today than ever before and continues to increase as nations strive to improve their standards of living.

Mining Engineering is a highly technical field, and today, the challenges of mining are greater than ever. High-tech techniques are now being designed to make tomorrow's mines more productive, safer, and economically successful. Mining engineers are actively seeking ways to extract essential raw materials without causing undue disturbance to the environment.

4.27.2 PROGRAM MISSION:

This program aims to advance scholarly research that enhances the scientific, mathematical, and technical capabilities of researchers to address complex challenges in the mining industry. It focuses on generating new knowledge and developing innovative methodologies through the application of advanced analytical tools and mining-related software, thereby contributing to the sustainable growth and technological advancement of Pakistan's mineral sector.

4.27.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Mining Engineering degree program are:

i) Enable scholars to add value to organizations and industries by analyzing, evaluating, and improving the quality and efficiency of mining engineering systems and processes through the use of modern engineering tools and techniques.
ii) Equip scholars with technical and creative capabilities to develop innovative solutions to complex problems and challenges in mining industry.
iii) Develop professionals with strong communication, management, and leadership skills to lead projects, conduct research, and effectively publish and present their work.

4.27.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Associate Professor & Chairman: Dr. Fahad Irfan Siddiqui PhD, (MUET, Jamshoro, Pakistan)	Dr. Muhammad Raheel Bawani PhD, (Turkey)
Assistant Professor: Dr. Munawar Ali Pinjaro PhD, (China)	Dr. Muhammad Burhan Memon PhD, (China)
Dr. Shafi Muhammad Musab Ahmed PhD, (MUET, Jamshoro, Pakistan)	Dr. Saleem Raza Baloch PhD, (MUET, Jamshoro, Pakistan)
Dr. Sultan Ahmed Khoso PhD, (China)	

4.27.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Advanced Geo statistics	(3+0)	100
2.	Longwall Top Coal Caving	(3+0)	100
3.	Numerical Methods in Underground Excavation Design	(3+0)	100
4.	Shovel-Truck Systems in Open Pit Mine	(3+0)	100
5.	Advanced Mine Health and Safety Engineering	(3+0)	100
6.	Risk Analysis in Mining Industry	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.27.6 CAREER OPPORTUNITIES:

The Doctor of Philosophy (PhD) in Mining Engineering prepares scholars for leadership roles in academia, advanced research, and high-impact industrial innovation. Graduates will be equipped to contribute cutting-edge knowledge in fields such as mine planning, mineral processing, rock mechanics, and sustainable resource management. In academia and research institutions, they can lead multidisciplinary projects, publish in international journals, and mentor future engineers and scientists. In government and policy organizations,

PhD graduates can play a key role in shaping national mineral resource strategies, environmental frameworks, and technology-driven reforms for the mining sector.

In the private and industrial domains, graduates will be positioned to lead R&D divisions, consultancy projects, and innovation programs focused on digital mining, automation, artificial intelligence in geo resource modeling, and renewable energy integration. The program also prepares researchers to collaborate globally on frontier areas such as carbon-neutral mining, circular economy models, and critical minerals development. With their advanced analytical, technical, and leadership capabilities, PhD graduates will be well-prepared to drive sustainable transformation and resilience in the global mining industry.




4.28 METALLURGY & MATERIALS ENGINEERING (PH.D)

4.28.1 INTRODUCTION:

The Department of Metallurgy and Materials Engineering at Mehran University of Engineering & Technology (MUET) offers a Doctor of Philosophy (PhD) program in Metallurgy and Materials Engineering. The department was established in 1972, the department has a strong legacy of delivering high-quality education and fostering research in this specialized field. Metallurgy and Materials Engineering is fundamental to the discovery, design, and development of advanced materials vital to modern technological progress.

These materials include high-performance alloys, ceramics, polymers, composites, and nanomaterials, all of which contribute to innovations across aerospace, automotive, electronics, construction, and energy industries. The discipline has further expanded into nanotechnology, enabling the manipulation of materials at the atomic and molecular levels to achieve exceptional properties. The PhD program is designed to equip students with both solid theoretical knowledge and practical skills, enabling them to play an active role in addressing emerging challenges and driving advancements in metallurgy and materials engineering.

The Department offers comprehensive Doctor of Philosophy (PhD) degree program in Metallurgy and Materials Engineering. PhD program offers research opportunities in a range of fields, including:

1. Corrosion and Surface Engineering	6. Advance Ceramics
2. Nanomaterials	7. Joining Processes
3. Biomaterials	8. Mineral Processing
4. Metals and Alloys	9. Fracture and Failure Analysis
5. Polymer and Composite Materials	

4.28.2 PROGRAM MISSION:

The mission of the Doctor of Philosophy (PhD) program in Metallurgy and Materials Engineering at Mehran University of Engineering and Technology is to provide advanced, high-quality education that builds strong technical, analytical, and ethical skills, preparing graduates to innovate in materials engineering and contribute to national industry and sustainable development.

4.28.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Metallurgy & Materials Engineering degree program are:

i) Develop highly skilled researchers, academicians, and technologists equipped with strong analytical, experimental, and computational capabilities.
ii) Foster innovation and problem-solving that addresses critical challenges in energy, manufacturing, sustainability, and advanced materials.
iii) Promote industry-academia collaboration to support the development of high value materials and processes relevant to national and international needs.

4.28.4 ACADEMIC STAFF:

Associate Professor and Chairman: Dr. Umair Aftab, PhD, (MUET, Pakistan)	**Assistant Professors:** Dr. Muddassir Ali Memon PhD, (MUET, Pakistan)
Associate Professor: Dr. M. Wasim Akhtar PhD, (South Korea)	Dr. Imtiaz Ali Soomro PhD, (Malaysia) (On Post. Doc Leave)

4.28.5 COURSES OFFERED:

The following is a list of elective courses:

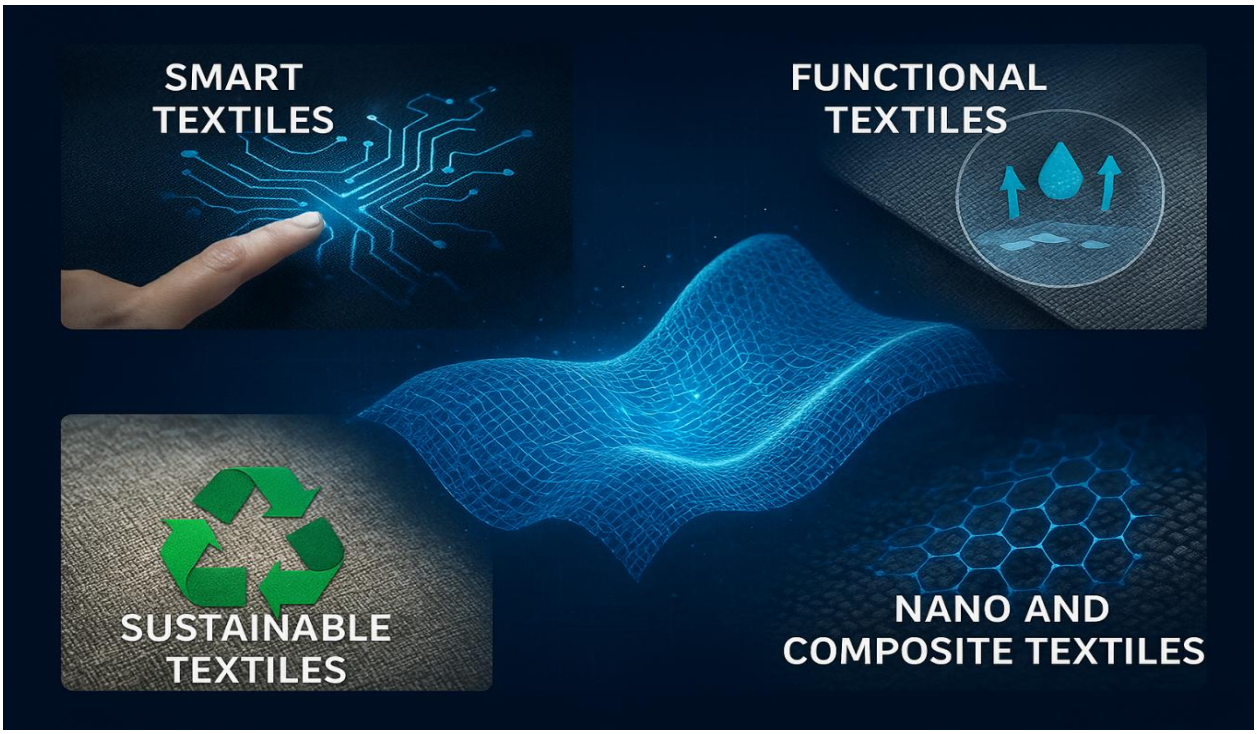
Sr. No.	Subjects	Credit Hours	Marks
1.	Surface Engineering	(3+0)	100
2.	Synthesis and Design of Nanomaterials	(3+0)	100
3.	Advances in Steel and Cast Iron	(3+0)	100
4.	Non-Ferrous Alloys	(3+0)	100
5.	Polymeric Materials	(3+0)	100
6.	Advances in Ceramic Materials	(3+0)	100
7.	Composite Materials	(3+0)	100
8.	Biomaterials	(3+0)	100
9.	Materials for Renewable and Sustainable Energy	(3+0)	100
10.	Advances in Physical Metallurgy	(3+0)	100
11.	Mineral Processing and Extractive Metallurgy	(3+0)	100
12.	Design of Engineering Materials	(3+0)	100
13.	Damage Analysis of Materials	(3+0)	100
14.	Advanced Characterization Techniques	(3+0)	100
15.	Mathematical Modelling and Simulation	(3+0)	100
16.	Research Methodology	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100

Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

4.28.6 CAREER OPPORTUNITIES:

A Doctor of Philosophy in Metallurgy and Materials Engineering offers strong career prospects across industries such as steel, aerospace, automotive, oil and gas, and energy. Graduates can also work in emerging areas like nanotechnology, contributing to electronics, energy storage, and biomedical applications. Opportunities further extend to academia, research organizations, and entrepreneurial ventures, including establishing materials testing labs or offering consultancy services.



4.29 TEXTILE ENGINEERING (PH.D)

4.29.1 INTRODUCTION:

The department of Textile Engineering started its PhD program with the aims to provide a quality education to produce professionals with adequate knowledge, skills and attitude for successful career. Our vision is to be an educational institution that provides an education at the international level and research-based solution providers to the industry.

4.29.2 PROGRAMME MISSION:

The mission of the textile engineering PhD program is to prepare individuals to function as independent textile researchers who can take an interdisciplinary approach to textile issues by their advance knowledge of the applications of scientific and technical tools. Graduates with this degree are prepared for careers as higher education educators, research scientists and specialized professionals within the field of textile engineering.

4.29.3 PROGRAM OBJECTIVES:

The objectives of the PhD Textile Engineering program are as follows:

i) Adding value to the organizations/industries through participating in the professional activities of quality and efficiency of textile processes and products, and using modern engineering tools and techniques.
ii) Developing necessary skills to solve the complex problems/challenges by conducting research.
iii) Excel in a variety of institutional settings, including universities, industry and government research labs, and think tanks

4.29.4 LABORATORY FACILITIES:

The department of Textile Engineering equipped with following key laboratories to gain hand on practical experience and perform the research in different areas of textiles:

1.	Yarn Manufacturing Laboratory	7.	Computer Laboratory
2.	Fabric Manufacturing Laboratory	8.	Color Research Laboratory

3.	Knitting Laboratory	9.	Nanomaterials Research Laboratory
4.	Textile Chemistry and wet Processing Laboratory	10.	Functional Materials and Polymer Engineering Laboratory
5.	Textile Testing and Quality Control Laboratory	11.	Smart and Energy Textile Materials Research Laboratory
6.	Garment Manufacturing Laboratory	12.	Advanced Composite Laboratory

4.29.5 ACADEMIC STAFF:

The following academic staff is engaged for teaching courses in the textile-engineering department:

Professor & Chairperson: Prof. Dr. Awais Khatri PhD, (Australia)	**Assistant Professors:** Dr. Sanam Irum Memon PhD, (MUET, Pakistan)
Prof. Dr. Zeeshan Khatri PhD, (Japan)	Dr. Abdul Wahab Memon PhD, (Belgium)
Prof. Dr. Farooq Ahmed PhD, (MUET, Pakistan)	Dr. Anam Ali Memon PhD, (South Korea)
Associate Professors: Dr. Iftikhar Ali Sahito PhD, (South Korea)	Dr. Rabia Almas PhD, (MUET, Pakistan)
Dr. Samander Ali Malik PhD, (Germany)	Dr. Umaima Saleem PhD, (Turkey)
Dr. Abdul Wahab Jatoi PhD, (Japan)	Dr. Pardeep Kumar Gianchandani PhD, (Italy)
Dr. Naveed Mengal PhD, (South Korea)	Dr. Nadir Ali PhD, (China)
Dr. Raja Fahad Qureshi PhD, (MUET, Pakistan)	**Lecturer:** Dr. Sadaf Aftab Abbasi PhD, (Australia)

4.29.6 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Elective-I	(3+0)	100
2.	Elective-II	(3+0)	100
3.	Elective-III	(3+0)	100
Second Semester			
1.	Elective-IV	(3+0)	100
2.	Elective-V	(3+0)	100
3.	Elective-VI	(3+0)	100

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modelling and Simulation	(3+0)	100

2.	Research Methodology	(3+0)	100
3.	Advanced Textile Finishing	(3+0)	100
4.	Ecofriendly Materials	(3+0)	100
5.	Advanced Dyeing	(3+0)	100
6.	Total Quality Environmental Management	(3+0)	100
7.	Advanced Textile Products	(3+0)	100
8.	Advanced Textile Finishing	(3+0)	100
9.	Textile composites	(3+0)	100

4.29.7 CAREER OPPORTUNITIES:

A PhD in Textile Engineering offers a wide range of career prospects in academia, research institutions, and the global textile and apparel industry. Graduates can pursue careers as university professors, research scientists, R&D specialists, or technical consultants in textile manufacturing, sustainable materials, coloration, and smart textile technologies. The degree also opens doors to leadership roles in innovation, sustainability assessment, and product development across industries such as fashion, automotive, medical textiles, and protective clothing. With growing demand for eco-friendly and high-performance textiles, PhD holders are uniquely positioned to drive advancements in smart, digital, and sustainable textile solutions.

5. INSTITUTE OF INFORMATION & COMMUNICATION TECHNOLOGIES

(A). MASTERS DEGREE PROGRAMS:

The Institute of Information and Communication Technologies currently offers following Master's Degree Programs in:	
1. Computer & Information Engineering (ME)	7. Software Engineering (ME)
2. Electrical Power Engineering (ME)	8. Information Technology (ME)
3. Electronic Systems Engineering (ME)	9. Data Science (MS)
4. Industrial Automation and Control (ME)	10. Cyber Security (MS)
5. Mechatronics Engineering (ME)	11. Communication Systems & Networks (ME)
6. Biomedical Engineering (ME)	



5.1 COMPUTER & INFORMATION ENGINEERING (ME)

5.1.1 OBJECIVES:

The Master of Engineering (ME) in Computer Information Engineering program is designed to provide advanced knowledge and technical expertise in the design, development, integration, and management of modern computer and information systems. The program addresses emerging areas of computing, software engineering, computer networks, artificial intelligence, cybersecurity, and information technologies.

Students develop advanced understanding of computer systems, software development, intelligent computing, network technologies, information security, cloud computing, and emerging digital technologies. The curriculum emphasizes research, innovation, system design, and practical problem-solving, enabling graduates to develop efficient, secure, and intelligent solutions to complex engineering and societal challenges. The program typically spans two years, preparing graduates for professional careers, research, and further academic pursuits in the rapidly evolving field of computer and information engineering.

5.1.2 PROGRAM MISSION:

The mission of the program is to prepare highly qualified professionals and researchers with advanced expertise in computer and information engineering. The program fosters innovation and research in computing, software, intelligent systems, networks, and information technologies, enabling graduates to develop secure, efficient, and innovative solutions to complex engineering and societal challenges.

5.1.3 PROGRAM OBJECTIVES:

The rapidly evolving field of Computer Information Engineering requires highly skilled, innovative, and adaptable professionals with advanced technical knowledge and practical expertise. The aim of the M.E. in Computer Information Engineering program is to provide students with advanced knowledge, professional competencies, and specialized skills in computer systems, information technologies, software, networking, intelligent computing, and emerging technologies. The program prepares graduates to analyze complex engineering problems, design innovative technology-based solutions, and effectively apply modern computing techniques to meet the needs of industry and society. It further develops graduates who are capable of adapting to technological advancements, pursuing research and innovation, and responding effectively to the evolving demands of the technology-driven employment market. The program also provides opportunities to develop expertise

in the design, implementation, integration, and management of computer and information systems, preparing graduates for professional practice, research, leadership, and further academic pursuits.

The objectives of the program are as follows:

i). To prepare students who can contribute significantly to the research and the discovery of new knowledge and methods in computing.
ii). To produce specialized computer expertise through which advanced technologies and their applications can be enhanced, transferred, and utilized around the globe.
iii). To produce researchers who can investigate problems in different application domains and creatively develop and evaluate computational solutions.
iv). To equip graduates with a strong foundation for further research and discovery work.
v). To develop effective communication and collaboration skills as researchers who can document and publish their work in reputable journals and conferences.

5.1.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Fawad Ali Mangi PhD, Australia	**Assistant Professor:** Dr. Zartasha Baloch PhD, MUET, Pakistan
Emeritus Professor: Dr. Abdul Qadeer Khan PhD, United States of America	Dr. Adnan Ashraf PhD, MUET, Pakistan
Professor: Prof. Dr. Shahnawaz Talpur PhD, China	Engr. Rizwan Badar Baloch ME, MUET, Pakistan
Associate Professor & Chairperson: Dr. Sanam Narejo PhD, Italy	Dr. Ali Asghar Manjotho PhD, China
Dr. Moazzam Jawaid (On-Lien) PhD, United Kingdom	Dr. Irfan Ali Bhacho PhD, South Korea
Dr. Sammer Zai PhD, South Korea	Dr. Fawad Ali Mangi PhD, Australia
Dr. Muhammad Ahsan Ansari PhD, South Korea	**Lecturer:** Engr. Madeha Memon ME, MUET, Pakistan
Dr. Bushra Naz PhD, South Korea	Dr. Anam Memon PhD, MUET, Pakistan

5.1.5 LABORATORY FACILITIES:

Following state-of-the-art laboratories are available for the students where hands-on experience is provided. These laboratories provide high speed internet services in centralized environment:

1.	Advance Software Engineering & Research Lab	5.	Digital Image Processing Lab
2.	Artificial Intelligence Lab	6.	Microprocessor Applications and Robotics Lab
3.	Computing I and II Labs	7.	Multimedia & Visual Design Studio Lab
4.	Data Management and Internet Lab	8.	Software Development Lab

5.1.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Research Methodology	3+0	100+00
2.	Programming Principles and Practices	2+1	50+50
3.	Advance Database Management Systems	3+0	100+00
4.	Web Technologies	3+0	100+00
First Semester			
1.	Applied Artificial Intelligence	3+0	100+00
2.	Advanced Operating Systems	3+0	100+00
3.	Advanced Computer Systems Architecture	3+0	100+00
4.	Data Mining	3+0	100+00

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100+0	Thesis	6+0	200
2.	Elective-II	3+0	100+0			
Fourth Semester						
1.	Elective-III	3+0	100+0	Thesis	6+0	200
2.	Elective-IV	3+0	100+0			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Algorithms Design and System Programming	3+0	100+00
2.	Cloud Computing	3+0	100+00
3.	Social Media Analysis	3+0	100+00
4.	Image and Video Processing	3+0	100+00
5.	Big Data Analytics	3+0	100+00
6.	Information Security and Cyber Laws	3+0	100+00

5.1.7 CAREER OPPORTUNITIES:

The Master in Computer and Information Engineering (CIE) program opens a gateway to endless career opportunities, inspiring you to become a leader in the ever-evolving world of technology. This program equips graduates with the skills and knowledge to thrive in diverse industries, enabling them to excel as software developers, system architects, data

analysts, and IT consultants. With expertise in artificial intelligence, machine learning, and big data analytics, graduates are empowered to solve real-world problems and shape the future of innovation.

The program also prepares students for high-demand roles in cybersecurity, cloud computing, and network engineering, addressing the critical needs of businesses and governments worldwide. Those with an entrepreneurial mindset can utilize the program's interdisciplinary approach to launch startups, develop groundbreaking products, and drive digital transformation. Graduates can also explore opportunities in fields like robotics, IoT, and embedded systems, contributing to advancements in automation, smart devices, and intelligent systems.

Potential career opportunities include:

- Computer Systems Engineer
- Software Engineer / Software Architect
- Information Systems Engineer
- Data Engineer / Data Analyst
- AI & Machine Learning Engineer
- Cybersecurity Engineer / Security Analyst
- Network Engineer / Network Architect
- Cloud Computing Engineer
- Database Administrator / Database Engineer
- IoT and Embedded Systems Engineer
- Systems Analyst



5.2 ELECTRICAL POWER ENGINEERING (ME)

5.2.1 INTRODUCTION:

The Master of Engineering (M.E) in Electrical Power Engineering program at the Department of Electrical Engineering, Mehran UET Jamshoro, is designed to provide advanced knowledge and practical expertise in the field of Electrical Engineering. The program focuses on core areas such as power generation, transmission, distribution, and utilization, with an emphasis on modern technologies and sustainable energy solutions.

Students gain a deep understanding of subjects like electrical machines, power system analysis, power electronics, and renewable energy integration. The curriculum also covers smart grid technologies, energy management systems, and the optimization of power networks, preparing graduates to address the challenges of evolving energy demands. The program typically spans two years, fostering expertise to meet national and global energy needs.

5.2.2 PROGRAM MISSION:

The mission of the program is to develop skilled professionals capable of addressing the evolving challenges of the power sector. The program emphasizes advanced knowledge, research, and innovation in power generation, transmission, and distribution, with a focus on sustainability and energy efficiency.

5.2.3 PROGRAM OBJECTIVES:

The ME in Electrical Power Engineering as well as PhD program aims to produce highly-skilled professionals focused on productive research and development in the vast domain of Electrical Engineering. Pakistan being the developing country is beset with this problem. Our industry is facing challenges arising out of the rapid growth of the population and short supply of the energy. In order to meet these challenges effectively and successfully highly skilled trained engineers are needed to develop and implement the advances in Science and Technology to solve the problems and ensure a very high degree of system reliability along with the utmost regard for the protection of our ecology. The Department of Electrical Engineering through the Directorate of IICT has developed a Program of postgraduate studies and research leading to ME & PhD.

This ME program will also be offered at Shaheed Zulfiqar Ali Bhutto Campus Khairpur Mirs.

5.2.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor and Chairman: Dr. Syed Asif Ali Shah PhD, (Austria)	Dr. Abdul Hakeem Memon PhD, (China)
Meritorious Professor: Dr. Zubair Ahmed Memon PhD, (MUET, Pakistan)	Dr. Pervez Hameed Shaikh PhD, (Malaysia)
Professor & Dean, FEECE: Dr. Ashfaque Ahmed Hashmani PhD, (Germany)	**Assistant Professors:** Engr. Abdul Jabbar Memon ME, (MUET, Pakistan)
Professors: Dr. Abdul Sattar Larik PhD, (MUET, Pakistan)	Dr. Mansoor Ahmed Soomro PhD, (MUET, Pakistan)
Dr. Mukhtiar Ahmed Mahar PhD, (MUET, Pakistan)	Dr. Shoaib Ahmed Khatri PhD, (MUET, Pakistan)
Dr. Ali Asghar Memon PhD, (UK)On Leave	Dr. Shafi Muhammad Jiskani PhD, (MUET, Pakistan)
Dr. Amir Mahmood Soomro PhD, (China)	Dr. Zuhaib Hussain Leghari PhD, (Malaysia)
Associate Professors: Dr. Anwar Ali Sahito PhD, (MUET, Pakistan)	Dr. RabailMemon PhD, (MUET, Pakistan)
Dr. Nayyar Hussain Mirjat PhD, (MUET, Pakistan)On Lien	**Lecturer:** Engr. Faheem Shafique Channar ME, (MUET, Pakistan)- *On Study Leave*
Dr. Faheemullah Shaikh PhD, (China)	Engr. Mustafa Memon ME, (MUET, Pakistan)- *On Study Leave*
Dr. Mahesh Kumar PhD, (Malaysia)	Engr. Shaoib Shaikh ME, (MUET, Pakistan)- *On Study Leave*

5.2.5 LABORATORY FACILITIES:

The Department of Electrical Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in the fields of power systems, electrical machines, power electronics, renewable energy, control systems, and smart grid technologies. The following laboratories are available at the Department of Electrical Engineering, MUET, Jamshoro:

1.	Power System Lab	9.	Advance Computer Lab
2.	Applied Electricity Lab	10.	Clean Energy Lab
3.	Power Electronics Lab	11.	Electrical Workshop Lab
4.	Communication Lab	12.	Control and Automation Lab
5.	Electrical Machines Lab	13.	Electrical Power Transmission and Distribution Lab
6.	Computer Lab	14.	Electrical Circuit &Measurement Lab
7.	High Voltage Engineering Lab	15.	Alternate Energy Lab
8.	Communication Lab	16.	Calibration Lab

5.2.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Power Quality (ELP-611)	(2+0)	50
2.	Electrical Power Transmission Systems (ELP-612)	(2+0)	50
3.	Power System Operation and Control (ELP-613)	(2+0)	50
4.	Clean Energy Technologies(ELP-614)	(2+0)	50
5.	Power System Analysis (ELP-615)	(2+0)	50
6.	Advanced Electrical Machine Design(ELP-616)	(2+0)	50
Second Semester			
1.	Power Electronics (ELP-621)	(2+0)	50
2.	Power System Stability (ELP-622)	(2+0)	50
3.	Advanced High Voltage Engineering (ELP-623)	(2+0)	50
4.	Energy Management (ELP-624)	(2+0)	50
5.	Power System Protection (ELP-625)	(2+0)	50
6.	Electrical Power Distribution Systems (ELP-626)	(2+0)	50

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	FACTS and HVDC	3+0	100	Thesis	6+0	200
2.	Elective Course-I	3+0	100			
Fourth Semester						
1.	Solid State Drives	3+0	100	Thesis	6+0	200
2.	Elective Course-II	3+0	100			

- **The following is a list of Elective Courses-I:**

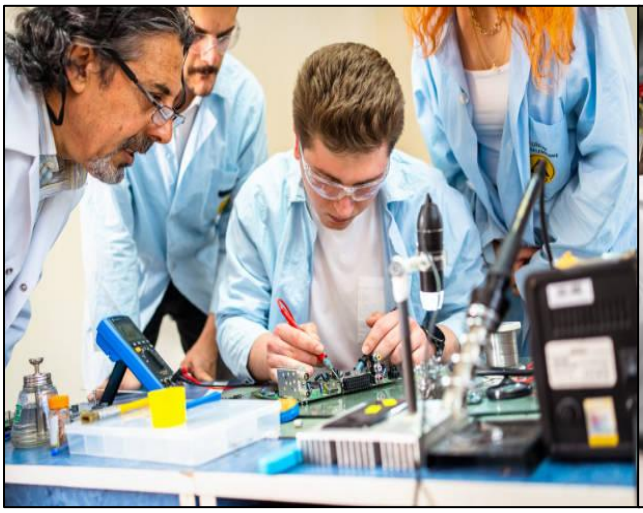
Sr. No.	Subjects	Credit Hours	Marks
1.	Smart Grid Technology and Application (ELP-632)	(3+0)	100
2.	Power System Planning and Management (ELP-633)	(3+0)	100

- **The following is a list of Elective Courses-II:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Power System Modeling and Simulation (ELP-642)	(3+0)	100
2.	Renewable Energy Integration and Optimization (ELP-643)	(3+0)	100

5.2.7 CAREER OPPORTUNITIES:

The course is designed to develop advanced knowledge and expertise in the field of power engineering. This knowledge is essential for addressing the needs of various organizations, including WAPDA, K-Electric, private power sectors, and manufacturing industries. The program covers core areas such as power generation, transmission, distribution, and renewable energy integration, ensuring graduates are equipped to handle modern challenges in the energy sector. By providing both theoretical and practical learning experiences, the courses prepare students to contribute effectively to national and global energy infrastructure development, driving innovation and efficiency.




5.3 ELECTRONIC SYSTEMS ENGINEERING (ME)

5.3.1 INTRODUCTION:

In today's complex world, electronics, computers, and communications permeate every facet of our lives and will play an even greater role in the future. This technological growth provides exciting, challenging, and rewarding career opportunities for forward-looking students interested in application-oriented careers in Electronic, Electrical, and Telecommunication Engineering under the umbrella of the Institute of Information and Communication Technologies (IICT).

These engineering disciplines are essential to modern industrial development, scientific research, and technological innovation. The Department aims to equip students with sound theoretical knowledge, practical skills, and professional competencies to meet the demands of the rapidly changing technological environment.

Furthermore, advancements in artificial intelligence, robotics, automation, and wireless communication are creating new opportunities for engineering graduates. The Department encourages creativity, critical thinking, teamwork, and lifelong learning to prepare students for successful professional careers. Its ultimate objective is to produce skilled and responsible engineers who can contribute to technological progress, industrial growth, and the sustainable development of Pakistan.

5.3.2 PROGRAM MISSION:

To produce competent and quality Electronic Engineers equipped with strong technical knowledge, analytical skills, and a broad vision to address contemporary engineering challenges. The department aims to promote research, innovation, professional ethics, and lifelong learning, enabling graduates to meet current industrial demands, anticipate future technological advancements, and contribute effectively to national and international development.

5.3.3 OBJECTIVE:

The Electronic Systems Engineering (ESE) program provides a recognized graduate educational program with emphasis in:

- VLSI Design
- Microelectronics
- Power electronics
- Embedded systems
- Communication Systems
- Instrumentation and control systems

5.3.4 PROGRAM OBJECTIVES:

The objectives of the ME in Electronic System Engineering degree program are:

i). To prepare the graduates with core program of analog and digital electronics with specialization streams in: instrumentation and control, communications, micro-electronics, and power and energy.
ii). To prepare Electronic Systems Engineering specialists to articulate complex industry problems and solutions.
iii). To prepare the students with solid managerial, leadership skills and strong ethical and moral values.

5.3.5 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Meritorious Professor: Dr. Bhawani Shankar Chowdhry PhD, Post Doc., (UK)	Dr. Yasmeen Naz Panhwar PhD, (Australia)
Professor & Chairperson Dr. Wajiha Shah PhD, (Austria)	Dr. KhuhedMemon PhD, (Malaysia)
Professor & Director, IICT Dr. Arbab Nighat Kalhoro PhD, (China)	Dr. Shoaib Rehman Soomro PhD, (Turkey), Post Doc., (Spain)
Professors: Dr. Farida Memon PhD, (MUET, Pakistan)	Engr. Aamir Ali Patoli ME, (MUET, Pakistan)- *On Study Leave*
Dr. Attiya Baqai PhD, (MUET, Pakistan)	Engr. Sara Qadeer ME, (MUET, Pakistan)
Associate Professors: Dr. Tayab Din Memon PhD, (Australia) - *On Lien*	Dr. Saba Baloch PhD, (Malaysia)
Dr. Irfan Ahmed Halepoto PhD, (MUET, Pakistan)	Engr. Mansoor Ali Teevno ME, (MUET, Pakistan)
Dr. Zaigham Abbas Shah PhD, (USA)	Engr. Bushra Abro ME, (MUET, Pakistan)
Assistant Professor: Dr. Khalil-Ur-Rehman Dayo PhD, (MUET, Pakistan)	**Lecturers:** Engr. Qurban Ali Memon ME, (MUET, Pakistan)
Dr. Kehkashan Asma PhD, (MUET, Pakistan)	Engr. Komal Khuwaja ME, (MUET, Pakistan)
Dr. Kamran Kazi (Program Coordinator) PhD, (MUET, Pakistan)	Engr. Qudsia Memon ME, (MUET, Pakistan)
Engr. Mehboob Khuwaja ME, (MUET, Pakistan)- On Lien	Engr. Shahnila Badar ME, (Pakistan)

5.3.6 LABORATORY FACILITIES:

The department of Electronic Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Electronic Systems Engineering The following laboratories are available at the Department of Electronic Engineering, MUET, Jamshoro:

1.	Instrumentation & Control Lab	2.	Communication System Lab
3.	Analog Electronics Lab	4.	Project Lab-I & II

5.	Digital System Design Lab	6.	Computing Lab
7.	Embedded System Lab	8.	Research Lab
9.	Modeling and Simulation Lab	10.	Power Electronics & Circuit Design Lab
11.	Edge AI Lab		

5.3.7 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Electronic Instrumentation and Data Acquisition Systems	(3+0)	100-0
2.	Modeling and Simulation of Dynamic Systems	(3+0)	100-0
3.	Advanced Integrated Circuit Design	(3+0)	100-0
4.	Advanced Embedded System Design	(3+0)	100-0
Second Semester			
1.	Power Electronics and Drives	(3+0)	100-0
2.	Microelectronics	(3+0)	100-0
3.	Communication Systems and Technologies	(3+0)	100-0
4.	Advanced Digital System Design	(3+0)	100-0

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-(I/II/III) (I/II/III)	6+0	200	Thesis	6+0	200
Fourth Semester						
1.	Elective-(IV/V/VI) (I/II/III)	6+0	100	Thesis	6+0	200

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Digital Image Processing for FPGA Implementation	3+0	100
2.	Hardware Synthesis and System level Design	3+0	100
3.	Artificial Intelligence and Soft Computing	3+0	100
4.	Embedded Robotics	3+0	100
5.	Passive Optical Networks	3+0	100
6.	Modern Trends in Electronic Systems Design	3+0	100
7.	IC Design and Manufacturing Techniques	3+0	100
8.	Advanced Digital Signal Processing	2+0	50
9.	Research Methodology	2+0	50
10.	Neural Network and Fuzzy Logic	3+0	100

5.3.8 CAREER OPPORTUNITIES:

Career opportunities in **Electronic Systems Engineering** involve designing, developing, and maintaining electronic devices and systems.

i). **Electronics Design Engineer**
- Design and create electronic circuits for devices like smartphones, TVs, or medical equipment.

ii). **Systems Engineer**
- Build and manage complex systems, like communication networks or control systems for factories.

iii). **Embedded Systems Engineer**
- Work on microcontrollers and programming the hardware inside cars, appliances, or robots.

iv). **Telecommunications Engineer**
- Design and improve networks for mobile phones, internet, and satellite systems.

v). **Automation Engineer**
- Develop systems for automating processes in industries like manufacturing or healthcare.

vi). **Power Electronics Engineer**
- Design power systems for renewable energy, electric vehicles, or energy-efficient devices.

vii). **Product Engineer**
- Test and improve electronic products to make them reliable and market-ready.

viii). **Research and Development (R&D) Engineer**
- Innovate and create new technologies, such as advanced sensors or wearable devices.

ix). **Maintenance and Support Engineer**
- Ensure that electronic systems and equipment function smoothly in industries like aviation, defense, or healthcare.

x). **IoT Engineer**
- Develop smart systems that connect devices, like smart homes or wearable tech.

11. **Field Service Engineer**
- Install, repair, and maintain electronic systems on-site, such as medical devices or industrial machinery.



5.4 INDUSTRIAL AUTOMATION & CONTROL (ME)

5.4.1 INTRODUCTION:

There is a global shortage of automation, instrumentation, and control engineers due to the rapid growth of new industries and technologies. The Master of Engineering (Industrial Automation and Control) addresses the growth and new technologies in the Industrial Automation industry. Automation and control engineering is a diverse and rapidly expanding discipline which has become increasingly important in a wide range of industries. The program provides practicing engineers with advanced yet practical tools in the development, integration, and operation of computer-based control and automation systems. The duration of the program is two years and it is an important and job orienting in nature.

Automation and control are important aspects of modern manufacturing and utility supply. Many manufacturing assembly lines and processes utilize programmable control systems. It is essential to equip the prospective engineer in this field with the appropriate theoretical and practical knowledge. This course will extend the students skills across essential areas in the field of automation and control. Student will use the existing knowledge of engineering theory and practice as the base to build new skills in this field such as embedded systems and control system design. Student will also learn to use Programmable Logic Controllers (PLCs) and Supervisory Control and Data Acquisition (SCADA) systems, Robotic and Automation, the industry standard for the development of effective control systems. Furthermore, Industrial Process Control Systems combines the process identification and feedback control design with a broad understanding of the hardware, system architectures and software techniques widely used to evaluate and implement complex control solutions and Machine Learning for Industrial Automation provides the intelligent control basics in the automation area.

5.4.2 PROGRAM MISSION:

To produce Quality Automation and Control Engineers with high intellect and broad vision who can meet current needs and foresee future technological needs through research and professional practice.

5.4.3 PROGRAM OBJECTIVES:

The objectives of the ME in Industrial automation and Control degree program are:

i). To equip the postgraduate students with technical as well as theoretical knowledge of industrial automation modern trends.
ii). To give in-depth knowledge of control systems related to industries.
iii). To equip students with understanding of industry standards.

5.4.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Meritorious Professor: Dr. Bhawani Shankar Chowdhry PhD, Post Doc., (UK)	Dr. Yasmeen Naz Panhwar PhD, (Australia)
Professor & Chairperson Dr. Wajiha Shah PhD, (Austria)	Dr. Khuhed Memon PhD, (Malaysia)
Professor & Director, IICT Dr. Arbab Nighat Kalhoro PhD, (China)	Dr. Shoaib Rehman Soomro PhD, (Turkey), Post Doc., (Spain)
Professors: Dr. Farida Memon PhD,(MUET, Pakistan)	Engr. Aamir Ali Patoli ME, (MUET, Pakistan) - **On Study Leave**
Dr. Attiya Baqai PhD, (MUET, Pakistan)	Engr. Sara Qadeer ME, (MUET, Pakistan)
Associate Professors: Dr. Tayab Din Memon PhD, (Australia) - **On Lien**	Dr. Saba Baloch PhD, (Malaysia)
Dr. Irfan Ahmed Halepoto PhD, (MUET, Pakistan)	Engr. Mansoor Ali Teevno ME, (MUET, Pakistan)
Dr. Zaigham Abbas Shah PhD, (USA)	Engr. Bushra Abro ME, (MUET, Pakistan)
Assist**ant Professors:** Dr. Khalil-Ur-Rehman Dayo PhD, (MUET, Pakistan)	**Lecturers:** Engr. Qurban Ali Memon ME, (MUET, Pakistan)
Dr. Kehkashan Asma PhD, (MUET, Pakistan)	Engr. Komal Khuwaja ME, (MUET, Pakistan)
Dr. Kamran Kazi (Program Coordinator) PhD, (MUET, Pakistan)	Engr. Qudsia Memon ME, (MUET, Pakistan)
Engr. Mehboob Khuwaja ME, (MUET, Pakistan) - **On Lien**	Engr. Shahnila Badar ME, (Pakistan)

5.4.5 LABORATORY FACILITIES:

The department of Electronic Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Electronic Systems Engineering

The following laboratories are available at the Department of Electronic Engineering, MUET, Jamshoro:

1.	Instrumentation & Control Lab	6.	Communication System Lab
2.	Analog Electronics Lab	7.	Project Lab-I & II
3.	Digital System Design Lab	8.	Computing Lab
4.	Embedded System Lab	9.	Research Lab
5.	Modeling and Simulation Lab	10.	Power Electronics & Circuit Design Lab.
6.	Edge AI Lab		

5.4.6 OFFERED COURSES:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Linear Control Theory	(3+0)	100-0
2.	Data Acquisition and Sensing Technology	(3+0)	100-0
3.	Industrial Electronics and Motors Drives	(3+0)	100-0
4.	Industrial Automation	(3+0)	100-0
Second Semester			
1.	Advanced Control Systems	(3+0)	100-0
2.	Industrial Process Control Systems	(3+0)	100-0
3.	Machine Learning for Industrial Automation	(3+0)	100-0
4.	Advanced Embedded Systems	(3+0)	100-0

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-(I/II/III) (I/II/III)	6+0	200	Thesis	6+0	200
Fourth Semester						
1.	Elective-(IV/V/VI) (I/II/III)	6+0	100	Thesis	6+0	200

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Digital Image Processing for FPGA Implementation	3+0	100
2.	Hardware Synthesis and System level Design	3+0	100
3.	Artificial Intelligence and Soft Computing	3+0	100
4.	Embedded Robotics	3+0	100
5.	Passive Optical Networks	3+0	100
6.	Robotics and Automation	2+0	50
7.	IC Design and Manufacturing Techniques	3+0	100
8.	Advanced Digital Signal Processing	2+0	50
9.	Research Methodology	2+0	50
10.	Neural Network and Fuzzy Logic	3+0	100

5.4.7 CAREER OPPORTUNITIES:

Career opportunities in **Industrial Automation and Control** focus on using technology to improve industrial processes and systems. Here are some examples of jobs in this field:

1. **Automation Engineer**
   - Design, program, and implement automated systems to increase efficiency and reduce manual labor in industries like manufacturing, energy, and food processing.

2. **Control Systems Engineer**
   - Develop and maintain control systems (like PLCs, SCADA, and DCS) to regulate machinery and industrial processes.
3. **Instrumentation Engineer**
   - Design and maintain instruments and sensors used to monitor and control industrial processes.
4. **Robotics Engineer**
   - Create and program robots for tasks like assembly, packaging, and inspection in industries.
5. **Process Engineer**
   - Optimize industrial processes to ensure efficiency, safety, and cost-effectiveness, often working closely with automation systems.
6. **Maintenance Engineer**
   - Ensure that automated systems, machinery, and control devices are functioning efficiently and troubleshoot issues.
7. **SCADA Engineer**
   - Manage Supervisory Control and Data Acquisition systems for monitoring and controlling industrial facilities.
8. **HMI Developer**
   - Develop Human-Machine Interfaces to allow operators to interact with automated systems effectively.
9. **Industrial IoT (IIoT) Engineer**
   - Work on connecting industrial equipment to the Internet of Things to enable data-driven decision-making.
10. **System Integrator**
    - Combine hardware and software components into seamless automation systems for industries.
11. **Quality Control Engineer**
    - Ensure that products meet quality standards by integrating automated testing and monitoring systems.
12. **Energy Management Specialist**
    - Use automation to optimize energy use in industries, reducing costs and improving sustainability.
13. **Project Manager (Automation Projects)**
    - Oversee the design, implementation, and commissioning of automation systems in industrial projects.
14. **Safety Engineer**
    - Implement and monitor safety protocols in automated environments to prevent accidents and ensure compliance.
15. **Technical Sales Engineer**
    - Sell and provide technical advice on automation products, such as PLCs, sensors, and robotics.

Industries Hiring in Automation and Control:

- **Manufacturing**: Automotive, electronics, and food industries.
- **Energy**: Oil and gas, renewable energy.
- **Healthcare**: Pharmaceutical production and medical devices.
- **Logistics**: Warehouse automation and supply chain management.
- **Construction**: Smart building systems and HVAC automation.

With the global trend toward Industry 4.0, this field offers high demand and exciting prospects for innovation and growth.



5.5 MECHATRONICS ENGINEERING (ME)

5.5.1 INTRODUCTION:

Mechatronics is the synergistic integration of Mechanical, Electronic, Control, and Computer Engineering. Mechatronics Engineering is one of the rapidly growing fields of engineering, driven by the increasing demand for intelligent products, automated processes, and integrated engineering systems. The demand for mechatronic products and systems, and consequently for qualified Mechatronics Engineers, is continuously increasing worldwide. The growing use of automation and control in various industrial and technological applications is supported by smart sensors, actuators, microprocessors, microcontrollers, embedded systems, and computer-aided design and simulation tools. Engineers involved in the development and operation of such systems must possess a thorough understanding of the different components and their integration within the overall system. Research and development activities in Mechatronics are also expanding rapidly due to continuous advances in sensors, actuators, control systems, robotics, embedded computing, and intelligent technologies.

Modern industrial systems have evolved from purely mechanical or electromechanical systems into highly automated, computerized, and intelligent systems. Consequently, knowledge spanning multiple engineering disciplines is required for their proper design, analysis, operation, and control. Therefore, the need for education and advanced training in Mechatronics Engineering is continuously growing, as many modern products and systems integrate mechanical, electronic, computational, and control components. Applications include, but are not limited to, manufacturing and industrial automation, automotive systems, consumer appliances, robotics, and other intelligent engineering systems. The curriculum of the Master of Engineering (M.E.) in Mechatronics Engineering program has been carefully designed to reflect the interdisciplinary nature of the field and the evolving requirements of modern industry. The ME Mechatronics Engineering program is offered through both Course and Course & Research streams, providing students with opportunities for advanced professional development and research.

5.5.2 PROGRAM MISSION:

The mission of the M.E. in Mechatronic Engineering program is to prepare students to design and develop efficient and intelligent mechatronic systems and products. The students will be equipped with theoretical and practical knowledge spanning over multiple disciplines to design and develop mechatronic products and systems for real life applications.

5.5.3 PROGRAM OBJECTIVES:

The objectives of the ME in Mechatronic Engineering degree program are:

i). To provide students with advanced Mechatronics engineering design methodologies with the emphasis on application of mathematical, scientific and engineering principles.
ii). To prepare post-graduates for the success in technical learning and demonstrate leadership in the field of Mechatronics engineering.
iii). To provide graduates to become productive citizens with high ethical and professional standards as well as awareness of the societal impact of merged technologies.

5.5.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Chairman& Associate Professor: Dr. Saifullah Samo PhD, (China)	**Professor:** Dr. Jawaid Daudpoto PhD, (UK)
Associate Professor: Dr. Shadi Khan Baloch PhD, (Turkey)	**Assistant Professor:** Engr. Raheel Ahmed ME, (MUET, Pakistan)

5.5.5 LABORATORY FACILITIES:

The department of Mechatronic Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Mechatronic Engineering. The following laboratories are available at the Department of Mechatronic Engineering MUET, Jamshoro:

1.	Mechatronic System Design Lab	4.	Industrial Automation & Robotics Lab
2.	Instrumentation and Control Lab.	5.	Modeling & Simulation Lab
3.	Computer Lab.	6.	Robotics & Embodied Intelligence Lab

5.5.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Advanced Robotics	3+0	100
2.	Data Acquisition and Control	3+0	100
3.	Advanced Actuators	3+0	100
4.	Linear Control Systems	3+0	100
Second Semester			
1.	Image Processing for Intelligent Systems	3+0	100
2.	Advanced Embedded Systems	3+0	100
3.	Industrial Control Technology	3+0	100
4.	Machine Learning	3+0	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis	6+0	200
2.	Elective-II	3+0	100			

Fourth Semester						
1.	Elective-III	3+0	100	Thesis	6+0	200
2.	Elective-IV	3+0	100			

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Advanced Manufacturing Design Techniques	3+0	100
2.	Computer Integrated Manufacturing	3+0	100
3.	Cognitive Robotics	3+0	100
4.	Motion Planning for Mobile Robots	3+0	100
5.	Digital Control Systems	3+0	100
6.	Fuzzy Control Systems	3+0	100
7.	Machine Vision	3+0	100
8.	Advanced Measurement Techniques	3+0	100

5.5.7 CAREER OPPORTUNITIES:

Mechatronics Engineers have opportunities to work in both industrial and research sectors. Modern industry has evolved from conventional electromechanical systems toward highly automated, computerized, and intelligent systems; consequently, Mechatronics Engineering skills are increasingly in demand by both national and international organizations. Significant opportunities are also available for postgraduate education, research, and scholarships at national and international universities and research institutions.



5.6 BIOMEDICAL ENGINEERING (ME)

5.6.1 OBJECTIVE:

Biomedical engineering is amongst the fastest growing field of engineering. This program provides the opportunity for individuals with degrees in biomedical engineering and relevant fields to develop expertise in in product development, conduct research in bioinstrumentation, robotics and imaging. This program emphasizes an integration of engineering and the life sciences to address complex problems. Major areas in which courses are offered and research conducted includes bioinstrumentation, biomaterials and tissue engineering, biomechanics, neural engineering and rehabilitation engineering.

5.6.2 ACADEMIC STAFF:

Professor: Dr. Ahsan Ahmed Ursani PhD, (France)	Dr Abdul Raheem Ansari PhD, (Korea)
Professor & Chairperson: Dr. Abdul Qadir Ansari PhD, (MUET, Pakistan)	Dr. Maheen Surahio PhD, (China)
Associate Professor: Dr. Syed Amjad Ali PhD, (China)	Engr. Rabia Chandio ME, (MUET, Pakistan)
Dr. Noor Ahmed Sanbhal PhD, (China)	**Lecturer:** Engr. Salman Afridi ME, (MUET, Pakistan)

Dr. Muhammad Amir Panhwar PhD, (China)	Engr. Kandeel Fatima ME, (MUET)
Assistant Professor: Engr. N.P. Chowdhry M.Sc., (UK)	

5.6.3 COURSES OFFERED:

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)			
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Sr. No.**	**Subjects**	**Credit Hours**	**Marks**
First Semester							
1.	Medical Image	3	100	1.	Medical Image	3	100
2.	Medical Instrumentation	2	50	2.	Medical	2	50
3.	Statistics in Medicine	2	50	3.	Statistics in Medicine	2	50
4.	Advanced Digital Signal Processing	3	100	4.	Advanced Digital Signal Processing	3	100
5.	Ultrasonic Instrumentation and Imaging	2	50	5.	Ultrasonic Instrumentation and Imaging	2	50
Second Semester							
1.	Advanced Imaging Techniques	3	100	1.	Advanced Imaging Techniques	3	100
2.	Research Methodology	3	100	2.	Research Methodology	3	100
3.	Radiography and Computed Tomography	3	100	3.	Radiography and Computed Tomography	3	100
4.	Simulation of Dynamic Systems	01 (Pr)	50	4.	Simulation of Dynamic Systems	01 (Pr)	50
5.	Laser and Spectroscopy	02	50	5.	Laser and Spectroscopy	02	50
Third Semester							
1.	Ultrasound and Photo acoustic beamforming	2	50	1.	Project / Thesis	6	-----
2.	Internet of Medical Things	2	50	2.			
3.	Operations Research	2	50	3.			
Fourth Semester							
1.	Machine Learning for Signal Processing	3	100	1.	Project / Thesis	6	-----
2.	Microfluidics and Organs on Chip	3	100	2.			





5.7. SOFTWARE ENGINEERING (ME)

5.7.1 INTRODUCTION:

The Department offers Postgraduate programs leading to a Master's Degree in the discipline of Software Engineering. The program provides in-depth knowledge of various aspects of Software Engineering. It develops the capabilities of analysis, design, and implementation of Software Engineering Methods and Principles. This discipline addresses the key elements of modern Software Engineering through integrated courses, which combat the requirements of emerging markets of Professional Software Engineers at national and international levels. These courses are in conformance with the current and future needs of the software industry. To meet the latest trends in software and hardware technologies, the department is equipped with the latest state-of-the-art laboratories, which maintain high standards through the latest hardware and software support.

The department also aims to produce postgraduates who are equipped to both work in the software industry and pursue research in software engineering.

- Computational Linguistic and Interactive E-Learning Lab
- Visual Informatics, Image Processing, 3-D Modeling, Visualization Laboratory
- Data Warehousing and Management Laboratory
- Software Quality Assurance and Testing Laboratory
- Software Research and Development Laboratory
- Parallel Programming, Cluster Computing, Grid Research & Storage Management Lab.

Laboratories maintain high standards through latest hardware and software support. Recently the Labs are updated with latest hardware and software applications equipped with the latest engineering software applications. The laboratory rooms are spacious, equipped with air conditioners and safety/health standards to accommodate 50 students at a time with 1:1 student and PC ratio. Many renowned companies related to the IT field offer internships to the students of this department; many of our student are remained engaged in the internships to shine their skills and understand the market standards.

5.7.2 PROGRAM MISSION:

To train and prepare liberally educated, articulate, and skilled Software Engineers for leadership and professional careers who can meet current needs and foresee future requirements of the nation in the field of Software by deploying skilled professional practice.

5.7.3 PROGRAM OBJECTIVES:

The objectives of the ME in Software Engineering degree program are:

i). To develop expertise in software analysis, design, and implementation.
ii). To enable graduates to address modern Software Engineering challenges.
iii). To prepare professionals who can integrate into the global and local software markets.

5.7.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Chairperson: Dr. Naeem Ahmed Mahoto PhD, (Italy)	**Assistant Professors:** Dr. Din Muhammad PhD, (Australia)
Professors: Dr. Sania Bhatti PhD, (UK)	Mr. Salahuddin Sadar ME, (MUET, Pakistan)
Dr. Qasim Ali PhD, (China)	Dr. Areej Fatemah PhD, (MUET, Pakistan)
Dr. Mohsin Ali Memon PhD, (Japan)	Dr. Amirita PhD, (MUET, Pakistan)
Associate Professor: Dr. Syed Shehram Shah PhD, (Australia)	Dr. Rabeea Jafferi PhD, (Malaysia)

5.7.5 LABORATORY FACILITIES:

The Department of Software Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in the field of Software Engineering. The following laboratories are available at the Department of Software Engineering, MUET, Jamshoro:

1. Computational Linguistic and Interactive E-Learning Lab	4. Software Quality Assurance and Testing Lab
2. Visual Informatics, Image Processing, 3D Modeling, Visualization Lab	5. Software Research & Development Lab
3. Data Warehousing & Management Lab	6. Parallel Programming, Cluster Computing, Grid Research & Storage Management Lab

5.7.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Advanced Software Requirements Engineering	(3+0)	100
2.	Advanced Software System Architecture	(3+0)	100
3.	Research Methodology	(3+0)	100
4.	Modern Computing Paradigm	(3+0)	100
Second Semester			
1.	Software Testing and Quality Assurance	(3+0)	(100+0)
2.	Agile Software Development	(2+0)	(50+0)
3.	Advanced Formal Methods	(3+1)	(100+3)

4.	Data Mining Concepts & Techniques	(3+0)	(100+0)
5.	Software Engineering Lab – I	(0+1)	(0+50)
Third Semester			
1.	Software Security	(3+0)	(100+0)
2.	Elective – I	(2+0)	(50+0)
3.	Software Engineering Lab – II	(0+1)	(0+50)
Fourth Semester			
1.	Applied Data Science	(3+0)	(100+0)
2.	Elective – II	(2+0)	(50+0)
3.	Software Engineering Lab – III	(0+1)	(0+50)

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	2+0	50	Thesis	6+0	200
2.	Elective-I	2+0	50			
3.	Elective-I	2+0	50			
Fourth Semester						
1.	Elective-II	2+0	50	Thesis	6+0	200
2.	Elective-II	2+0	50			
3.	Elective-II	2+0	50			

- **The following is a list of elective courses:**

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
1.	SE703: Semantic-Based Software Engineering	(2+0)	50
2.	SE704: Advanced Human-Computer Interaction	(2+0)	50
3.	SE706: Component-Based Software Engineering	(2+0)	50
4.	SE713: Reliability Software Engineering	(2+0)	50
5.	SE714: Software Risk Management	(2+0)	50
6.	SE716: Agent-Based Modeling	(2+0)	50

5.7.7 CAREER OPPORTUNITIES:

Graduates from this program are equipped for careers in software development, quality assurance, data engineering, and research. Opportunities include roles in cybersecurity, data science, advanced computing technologies, and software project management. The program also prepares students for further academic research and teaching careers.



5.8 INFORMATION TECHNOLOGY (ME)

5.8.1 INTRODUCTION:

The Master of Engineering in Information Technology (M.E. IT) program at Mehran University of Engineering & Technology is a comprehensive postgraduate program aimed at equipping students with advanced knowledge and practical skills in the field of Information Technology. The program emphasizes the integration of hardware and software systems, covering key areas such as digital communication, computer networks, information security, software engineering, data mining, and machine learning. Designed to meet the evolving demands of the IT industry, the curriculum is regularly updated and supported by state-of-the-art laboratory facilities. The program also fosters research, lifelong learning, and ethical professionalism, preparing graduates to contribute effectively to academia, industry, and socio-economic development.

5.8.2 PROGRAM MISSION:

The mission of the program is to provide a quality education towards the latest trends in the field of Information Technology, enabling them to become organized and focused in their professional career and lifelong learning by exhibiting moral and ethical values, thereby becoming a useful part of society and contributing positively to the socio-economic growth of the country.

5.8.3 PROGRAM OBJECTIVES:

The challenging field of IT needs creative and knowledgeable professionals committed to quality. The aim of ME in IT program is to provide an opportunity to the students to acquire up-to-date technical knowledge; marketable skills, professional competencies, and valuable expertise in the rapidly advancing field of Information Technology to ensure a prosperous future. The program will produce graduates who will be flexible, adaptable to change, and able to face the challenges of the technology driven employment market. The program provides the professional skills and facilities for demanding expert, development and management tasks in key areas of information technology. Students gain excellent skills for developing and applying information technology as well as for managing complete entities in many other areas of technology.

The main objectives of the ME in Information Technology are as follows:

i). Graduates will be competent professionals with an integrated understanding of computing systems, processes, and the main body of knowledge of information

technology. They will be engaged in IT- related careers such as IT specialists, web/ applications developer, network/systems/database administrator in private practice, academe, industry, or government.

ii). Graduates will be capable of engaging in life-long learning activities relevant to their profession, including earning advanced degrees or completing professional training.

iii). Graduates will be capable of exhibiting professionalism in working individually or as a member/leader of a team; communicating effectively; and meeting the social and ethical responsibilities of their profession.

5.8.4 ACADEMIC STAFF:

Program Coordinator: Dr. Muhammad Ahsan Ansari PhD, South Korea	**Assistant Professors:** Dr. Zartasha Baloch PhD, MUET, Pakistan
Emeritus Professor: Dr. Abdul Qadeer Khan PhD, United States of America	Dr. Adnan Ashraf PhD, MUET, Pakistan
Professor: Prof. Dr. Shahnawaz Talpur PhD, China	Engr. Rizwan Badar Baloch M.E, MUET, Pakistan
Associate Professor & Chairperson: Dr. Sanam Narejo PhD, Italy	Dr. Ali Asghar Manjotho PhD, China
Dr. Moazzam Jawaid - **On-Lien** PhD, United Kingdom	Dr. Irfan Ali Bhacho PhD, South Korea
Dr. Sammer Zai PhD, South Korea	Dr. Fawad Ali Mangi PhD, Australia
Dr. Muhammad Ahsan Ansari PhD, South Korea	Dr. Anam Memon PhD, MUET, Pakistan
Dr. Bushra Naz PhD, South Korea	

5.8.5 LABORATORY FACILITIES:

Following state-of-the-art laboratories are available for the students where hands-on experience is provided. These laboratories provide high speed internet services in centralized environment:

1. Advance Software Engineering and Research Lab	5. Digital Image Processing Lab
2. Artificial Intelligence Lab	6. Microprocessor Applications and Robotics Lab
3. Computing I and II Labs	7. Multimedia & Visual Design Studio Lab
4. Data Management and Internet Lab	8. Software Development Lab

5.8.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Programming Principles & Practice	2+1	50+50
2.	Advance Database Management System	3+0	100+00
3.	Human Computer Interaction	3+0	100+00

4.	Research Methodology	3+0	100+00
Second Semester			
1.	Algorithm Analysis	3 – 0	100 - 00
2.	Mobile Application Development	3 – 0	100 - 00
3.	Business Intelligence	3 – 0	100 - 00
4.	Web Technologies	3 – 0	100 - 00

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100+0	Thesis	6+0	200
2.	Elective-II	3+0	100+0			
Fourth Semester						
1.	Elective-III	3+0	100+0	Thesis	6+0	200
2.	Elective-IV	3+0	100+0			

- **The following is a list of elective courses:**

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
1.	Cloud Computing	3+0	100+00
2.	Machine Learning	3+0	100+00
3.	Advance Computer Architecture	3+0	100+00
4.	Social Media Analysis	3+0	100+00
5.	Image and Video Processing	3+0	100+00
6.	Information Security and Cyber Laws	3+0	100+00

5.8.7 CAREER OPPORTUNITIES:

Graduates of the M.E. in Information Technology program can pursue careers in technology management, information systems, software services, digital transformation, and IT-enabled organizations. Potential career opportunities include:

- IT Manager / IT Director
- IT Project Manager
- Information Systems Manager
- IT Consultant
- Business Analyst
- Systems Analyst
- Enterprise Systems Specialist
- Database Administrator / Database Manager
- Network and Systems Administrator
- Cloud Computing Specialist
- Cybersecurity Specialist
- IT Governance and Compliance Specialist
- Digital Transformation Specialist
- IT Service Manager
- Technology Consultant
- Information Systems Architect



5.9 DATA SCIENCES (MS)

5.9.1 INTRODUCTION:

The MS in Data Science (MSDS) program at Mehran University of Engineering and Technology (MUET) reflects the institution's mission to promote technological change and sustainable development through higher education, research, and outreach. MUET is committed to providing a rewarding and challenging environment for faculty, staff, and students. The Department of Computer Systems Engineering, aligned with this mission, aims to lead in computing education for a smart, secure, and sustainable future. As this is the first self-assessment of the MS-DS program, its background lies in the department's strategic initiative to meet the growing industry demand for skilled data science professionals. The program was developed to equip students with the ability to extract insights from data, solve real-world problems using appropriate technologies, and understand the ethical implications of data use. The launch of the program has introduced challenges such as ensuring alignment with rapidly evolving technologies and maintaining a curriculum that balances theoretical knowledge with practical skills. Strategic priorities include regularly updating course content, incorporating hands-on training, and ensuring faculty development to safeguard academic standards and enhance the quality of students' learning opportunities.

In addition to the Qualifications Framework, the program adheres to external reference points such as the policies and guidelines set by the Higher Education Commission (HEC) of Pakistan and relevant accreditation bodies to ensure academic quality and professional relevance.

5.9.2 PROGRAM MISSION:

The MS (DS) program has been designed to give students the option to be part of a data science endeavor that begins with the identification of business processes, determination of data provenance and data ownership, and understanding of the ecosystem of business decisions, skill sets, and tools that shape the data.

It further involves making data amenable to analytics, identifying sub-problems, recognizing the technology matrix required for problem resolution, creating incrementally complex data-driven models, and then maintaining them to ultimately leverage them for business growth.

5.9.3 PROGRAM OBJECTIVES:

The amount of data is growing so rapidly and their significance in the emerging societal set ups such as the pervasive Internet of Things. The way one imagines data is going to change in the coming years. Both Big Data Analytics and pervasive computing hinge on the principal axis of data analytics. MS (DS) program is going to be relevant in terms of job creation and artisanal smart business generation. Graduates from this program would avail the early-bird advantage.

The MS (DS) program has been designed to give students the option to be part of a data science endeavor that begins with the identification of business processes, determination of data provenance and data ownership, understanding the ecosystem of the business decisions, skill sets and tools that shape the data, making data amenable to analytics, identifying sub-problems, recognizing the technology matrix required for problem resolution, creating incrementally-complex data-driven models and then maintaining them to ultimately leverage them for business growth.

The objective of master's in data science program are as follows:

i). To equip students to transform data into actionable insights to make complex business decisions.
ii). To enable students, understand and analyze a problem and arrive at computable solutions.
iii). To expose students to the set of technologies that match those solutions.
iv). To gain hands-on experience on data-centric tools for statistical analysis, visualization, and big data applications at the same rigorous scale as in a practical data science project.
v). To understand the implications of handling data in terms of data security and business ethics.

5.9.4 ACADEMIC STAFF:

Program Coordinator: Dr. Fawad Ali Mangi PhD, Australia	**Assistant Professors:** Dr. Zartasha Baloch PhD, (MUET, Pakistan)
Professor Emeritus: Dr. Abdul Qadeer Khan Rajput PhD, (USA)	Dr. Adnan Ashraf PhD, (MUET, Pakistan)
Professor: Dr. Shahnawaz Talpur PhD, (China)	Engr. Rizwan Badar ME, (MUET, Pakistan)
Associate Professor & Chairperson: Dr. Sanam Narejo PhD, (Italy)	Dr. Ali Asghar Manjotho PhD, (China)
Dr. Moazzam Jawaid (On-Lien) PhD, United Kingdom	Dr. Irfan Ali Bhacho PhD, (South Korea)
Associate Professors: Dr. Sammer Zai PhD, (South Korea)	Dr. Fawad Ali Mangi PhD, (Australia)
Dr. Muhammad Ahsan PhD, (South Korea)	**Lecturers:** Engr. Madeha Memon ME, MUET, Pakistan
Dr. Bushra Naz PhD, (China)	Dr. Anam Memon PhD, MUET, Pakistan

5.9.5 COURSES OFFERED:

List of Deficiency courses for non-IT candidates

Sr. No.	Subjects	Credit Hours	Marks
1.	Programming Fundamentals	2+0	50+00
2.	Design and Analysis of Algorithms	2+0	50+00
3.	Database Systems	2+0	50+00

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Data Science Tools and Techniques	2+1	50+50

2.	Statistical and Mathematical Models for Data Science	3+0	100+00
3.	Data Visualization	3+0	100+00
4.	Data Warehousing	3+0	100+00
Second Semester			
1.	Machine Learning	2+1	50+50
2.	Big Data Analytics	3+0	100+00
3.	Data Mining	3+0	100+00
4.	Cloud Computing	3+0	100+00

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100+0	Thesis	6+0	200
2.	Elective-II	3+0	100+0			
Fourth Semester						
1.	Elective-III	3+0	100+0	Thesis	6+0	200
2.	Elective-IV	3+0	100+0			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Deep Learning	3+0	100+00
2.	Natural Language Processing	3+0	100+00
3.	Image and Video Processing	3+0	100+00
4.	Social Media Analysis	3+0	100+00
5.	Data Science Ethics	3+0	100+00
6.	Information Security and Cyber laws	3+0	100+00

5.9.6 CAREER OPPORTUNITIES:

The MS in Data Science (MSDS) program offers diverse career opportunities across technology, business, research, government, healthcare, finance, telecommunications, and other data-intensive sectors. As organizations increasingly rely on data for decision-making, graduates can contribute to the development of analytical, predictive, and intelligent solutions.

Graduates may pursue careers in the following areas:

➢ Data Scientist	➢ Data Mining Specialist
➢ Data Analyst	➢ Predictive Analytics Specialist
➢ Data Engineer	➢ Data Visualization Specialist
➢ Machine Learning Engineer	➢ Business/Data Analytics Consultant
➢ AI Engineer	➢ AI/ML Researcher
➢ Business Intelligence Analyst	➢ Data Science Consultant
➢ Big Data Analyst	➢ Database and Analytics Specialist



5.10 CYBER SECURITY (MS)

5.10.1 INTRODUCTION:

The establishment of the Department of Telecommunication, MUET, in 2001 was to produce graduates to meet the market requirement in the areas such as Mobile and Wireless Communication, Multimedia and Broadband Communication, Communication Networks etc. Since then, the ICT industry has evolved and new avenues such as Cyber Security have become the mainstream concern of technology industries these days. Previously it was only required for the government agencies and defense sector but currently even industries like health, banking, finance, manufacturing and social media require expertise in the field of Cyber Security. With high demand in market, the Master of Science in Cyber Security program intends to produce skilled professionals to work as Security Analyst, Security Engineer, Security Architect, Security Administrator, Security Software Developer, Cryptographer, Cryptanalyst and Security Consultant among others.

5.10.2 PROGRAM MISSION:

To produce quality management professionals for the information and communication networks industry with the aim of imparting skills to efficiently plan, operate and maintain information and communication network systems.

5.10.3 PROGRAM OBJECTIVES:

The program objectives of the MS in Cybersecurity (CYS) degree program are:

i). Empower students with advanced technical expertise in network security, cryptography, ethical hacking, and incident response, enabling them to proficiently analyze, design, and execute impactful cyber security solutions.

ii). Cultivate graduates capable of critically addressing intricate cyber security challenges by formulating and evaluating solutions through experimental design, ensuring the protection of digital assets through informed decision-making.

iii). Equip students to ethically lead and collaborate across disciplines, employing effective communication to tackle worldwide cyber security challenges as a cohesive team.

5.10.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Chairman: Dr. Faisal Karim Shaikh PhD, (Germany)	Dr. Sajjad Ali Memon PhD, (China)

Program Coordinator: Dr. Umair Ahmed Korai PhD, (UK)	Dr. Zulfiqar Ali Arain PhD, (China)
Professors: Dr. Abdul Waheed Umrani PhD, (Singapore)	Dr. Saima Hafeez PhD, (China)
Dr. Nasrullah Pirzada PhD, (Malaysia)	Dr. Syed Mohsin Ali Shah PhD, (China)
Dr. Zafi Shehran Shah PhD, (UK)	Engr. Naeem Aijaz Yousfani ME, (MUET, Pakistan)
Associate Professors: Dr. Fahim Aziz Umrani PhD, (UK)	Engr. Riaz Ahmed Soomro ME, (MUET, Pakistan)
Dr. Abdul Latif Memon PhD, (China)	Engr. Shanzah Mohsin ME, (MUET, Pakistan)
Dr. Imran Ali Qureshi PhD, (China)	Engr. Mehran M. Memon ME, (MUET, Pakistan)
Dr. Sajjad Ali Memon PhD, (China)	Engr. Hyder Bux Mangrio ME, (MUET, Pakistan)
Assistant Professors: Dr. Umair Ahmed Korai PhD, (UK)	Engr. Syed Rizwan Ali Shah ME, (MUET, Pakistan)

5.10.5 LABORATORY FACILITIES:

The department of Telecommunication Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Cyber Security. The following laboratories are available at the Department of Telecommunication, MUET, Jamshoro:

1. Analog and Digital Communication Lab.	7. Cyber Security Lab.
2. Project Lab.	8. Cellular Communications Lab.
3. Transmission and Switching Lab.	9. Advanced Computing Lab.
4. Networking and Protocol Design Lab.	10. Digital Signal Processing Lab.
5. Optical Communication & Photonics Lab.	11. Radio Communication Lab.
6. PC Lab.-I	12. Internet of Things (IoT) Lab.

5.10.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Linux in Cyber Security	(0+1)	50
2.	Secure Networks & Protocols	(2+1)	50+50
3.	Cyber Security & Risk Management	(2+0)	50
4.	Cryptography	(2+0)	50
5.	Cyber Security Laws & Ethics	(2+0)	50
6.	Applied Machine Learning	(2+0)	50

7.	*Optional Deficiency Course:* Computer Networks	(0+0)	50
Second Semester			
1.	Python and Shell Programming for Cyber Security	(0+1)	50
2.	Digital Forensics	(2+0)	50
3.	Vulnerability Assessment &Pen testing	(2+1)	50+50
4.	Threat Intelligence	(2+0)	50
5.	Mobile Application Security	(2+0)	50
6.	Cloud Computing Security	(2+0)	50
7.	Python and Shell Programming for Cyber Security	(0+1)	50

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**(Course Work) Subjects**	**Credit Hours**	**Marks**	**(Project/Thesis) Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective I	3+0	100	Project	6	200
2.	Elective II	3+0	100			
Fourth Semester						
1.	Elective IV	3+0	100	Project	6	200
2.	Elective II	3+0	100			

- **The following is a list of elective courses:**

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
1.	Block chain Technology	(3+0)	100
2.	Business Continuity and Transformation	(3+0)	100
3.	Internet of Things Security	(3+0)	100
4.	Database Security	(3+0)	100
5.	Advanced Malware Analysis and Reverse Engineering	(3+0)	100
6.	DevSecOps Automation	(3+0)	100

5.10.7 CAREER OPPORTUNITIES:

Cyber Security offers career opportunities across organizations that depend on digital systems, networks, software, cloud infrastructure and sensitive information. These include cybersecurity service providers, software companies, banks, financial technology companies, telecommunications operators, government departments, defense organizations, healthcare institutions, energy utilities, manufacturing industries, aviation, e-commerce and educational institutions. Professionals in this field protect digital assets, secure critical infrastructure, investigate cyber incidents and support organizational resilience.

Graduates of the MS Cyber Security program can pursue technical, analytical, research and consultancy roles. Depending on their expertise and professional experience, career paths include Cybersecurity Analyst, Security Operations Centre (SOC) Analyst, Security Engineer, Penetration Tester, Application Security Engineer, Cloud Security Engineer, Digital Forensics Analyst, Incident Response Specialist, Malware Analyst, Cyber Threat Intelligence Analyst,

Identity and Access Management Specialist, Cryptography Researcher, Information Security Auditor, and Governance, Risk and Compliance (GRC) Analyst. With relevant experience, graduates may progress to positions such as Security Architect, Cybersecurity Consultant, Information Security Manager and Chief Information Security Officer (CISO).

Professional responsibilities may include assessing vulnerabilities, designing security controls, monitoring threats, investigating attacks, securing software throughout its development lifecycle, protecting personal and organizational data, and evaluating compliance with security policies and standards. Emerging areas include the security of artificial intelligence and generative AI systems, cloud-native applications, software supply chains, connected devices, operational technology and industrial control systems.

1. Cybersecurity Companies and Managed Security Service Providers

- Ebryx
- Rewterz
- Trillium Information Security Systems (TISS)
- Inbox Business Technologies
- Tranchulas
- Kualitatem
- Tier3
- Pligence
- PakCERT — private cybersecurity services company

2. Software, IT Services and Security Product Companies

- Systems Limited
- 10Pearls
- NETSOL Technologies
- Confiz
- Arbisoft
- Tkxel
- VentureDive
- Securiti AI

3. Banking, Financial Services and Fintech

- State Bank of Pakistan (SBP)
- Habib Bank Limited (HBL)
- United Bank Limited (UBL)
- Meezan Bank
- MCB Bank
- Allied Bank
- Bank Alfalah
- Bank AL Habib
- Faysal Bank
- Askari Bank
- National Bank of Pakistan
- Easypaisa
- JazzCash
- SadaPay
- NayaPay
- 1LINK
- National Institutional Facilitation Technologies (NIFT)

- Insurance companies, microfinance institutions and other payment service providers

4. Telecommunications, Internet Services and Digital Infrastructure

- Pakistan Telecommunication Company Limited (PTCL)
- Ufone
- Jazz
- Zong
- Special Communications Organization (SCO)
- Wateen Telecom
- Cybernet
- Multinet Pakistan
- Nayatel
- Transworld
- StormFiber
- RapidCompute
- Cloud service providers, data centres and enterprise connectivity providers

5. Government, Regulation and Cybercrime Investigation

- National Cyber Emergency Response Team of Pakistan (National CERT/PKCERT)
- National Cyber Crime Investigation Agency (NCCIA)
- Pakistan Telecommunication Authority (PTA)
- National Database and Registration Authority (NADRA)
- National Information Technology Board (NITB)
- Pakistan Revenue Automation Limited (PRAL)
- Pakistan Single Window (PSW)
- Federal and provincial information technology boards
- Government departments and public-sector security operations teams
- Digital forensics laboratories and cybercrime investigation units

6. Judiciary and Court Information Systems

- Supreme Court of Pakistan
- High Court of Sindh
- Other High Courts and subordinate courts, where relevant positions are advertised
- Examples of established positions:
    - Cyber Security Officer
    - Network Security Administrator
    - System Administration and Security Specialist
- Relevant areas of work:
- Protection of judicial networks and IT infrastructure
- Security of digital court records and case management systems
- Access control and protection of confidential judicial information
- Security monitoring, vulnerability management and incident response
- Secure systems administration, backup and recovery
- Protection of electronic filing and other digital court services

7. Defense, Aerospace and Strategic Organizations

- Pakistan Army
- Pakistan Navy
- Pakistan Air Force
- National Radio and Telecommunication Corporation (NRTC)
- National Engineering and Scientific Commission (NESCOM)
- Pakistan Aeronautical Complex (PAC), Kamra
- Maritime Technologies Complex (MTC)
- Pakistan Space and Upper Atmosphere Research Commission (SUPARCO)
- Defense technology companies and secure communications organizations

8. Energy, Utilities, Manufacturing and Critical Infrastructure

- K-Electric
- Water and Power Development Authority (WAPDA)
- Pakistan State Oil (PSO)
- Oil and Gas Development Company Limited (OGDCL)
- Pakistan Petroleum Limited (PPL)
- Sui Southern Gas Company (SSGC)
- Sui Northern Gas Pipelines Limited (SNGPL)
- Engro companies
- Fauji Fertilizer Company
- Power generation and distribution companies
- Pharmaceutical, cement, textile and automotive manufacturers
- Industrial automation and critical infrastructure service providers

9. Healthcare and Medical Information Systems

- Aga Khan University and its healthcare network
- Shaukat Khanum Memorial Cancer Hospital and Research Centres
- Indus Hospital & Health Network
- Public and private hospitals
- Diagnostic laboratories and healthcare technology companies
- Electronic health record, telemedicine and connected medical device providers

10. Aviation, Transport and Logistics

- Pakistan Civil Aviation Authority (PCAA)
- Pakistan Airports Authority (PAA)
- Pakistan International Airlines (PIA)
- Airblue
- Fly Jinnah
- AirSial
- Airport operators and aviation technology providers
- Transport, shipping, courier and logistics companies

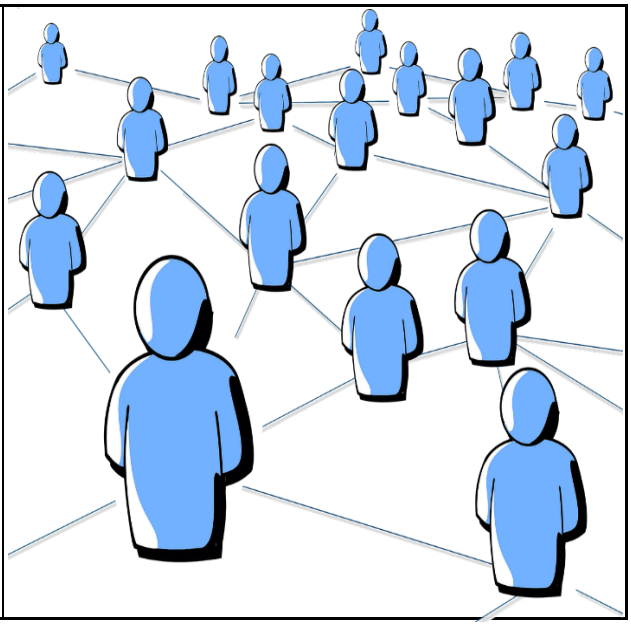
11. E-Commerce, Digital Platforms and Media

- Daraz
- foodpanda
- Online marketplaces and digital payment platforms
- Software-as-a-Service (SaaS) companies
- Broadcasting and digital media organizations, including Geo, ARY and Dawn

12. International Technology and Cybersecurity Companies

- Microsoft
- Google
- Amazon Web Services (AWS)
- IBM
- Cisco
- Palo Alto Networks
- Fortinet
- Check Point
- CrowdStrike
- Cloudflare
- Zscaler
- SentinelOne
- Trend Micro
- Sophos
- Tenable
- Qualys
- Rapid7
- Okta
- CyberArk
- Thales
- Huawei
- Ericsson
- Nokia





5.11 COMMUNICATION SYSTEMS & NETWORKS (ME)

5.11.1 INTRODUCTION:

The Program aims at producing graduates who have knowledge in computers, networks and communication engineering and can apply knowledge in the hardware and software administration of computer systems, database management, and networking. This program is especially designed for the professionals with the objectives to provide manpower for local and international market capable of designing, controlling, and developing computer-network systems. A highly motivated team of professors in this master's Program is focused on producing engineers who will be capable of conducting research in both theoretical and practical aspects with moral and professional ethics.

5.11.2 PROGRAM MISSION:

To produce quality management professionals for information and communication networks industry with the aim of imparting skills to efficiently plan, operate, and maintain information and communication network systems.

5.11.3 PROGRAM OBJECTIVES:

The objectives of the ME in Communication Systems and Networks are degree program are:

i). To produce graduates who have knowledge in computer networks and communication engineering and can strongly apply knowledge in the hardware and software administration of computer networks and communication engineering.

ii). To provide manpower for developing countries, capable of designing, controlling, and developing communication systems and networks.

iii). To produce engineers who will be capable of conducting research in both theoretical and practical aspects with moral and professional ethics.

5.11.4 ACADEMIC STAFF:

Professor & Chairman: Dr. Faisal Karim Shaikh PhD, (Germany)	Dr. Zulfiqar Ali Arain PhD, (China)

Professors: Dr. Abdul Waheed Umrani PhD, (Singapore)	Engr. Naeem Aijaz Yousfani ME, (MUET, Pakistan)
Dr. Nasrullah Pirzada PhD, (Malaysia)	Dr. Syed Mohsin Ali Shah PhD, (China)
Dr. Zafi Shehran Shah PhD, (UK)	Engr. Riaz Ahmed Soomro ME, (MUET, Pakistan)
Associate Professors: Dr. Fahim Aziz Umrani PhD, (UK)	Engr. Shanzah Mohsin ME, (MUET, Pakistan)
Dr. Abdul Latif Memon PhD, (China)	Engr. Mehran M. Memon ME, (MUET, Pakistan)
Dr. Imran Ali Qureshi PhD, (China)	Engr. Hyder Bux Mangrio ME, (MUET, Pakistan)
Dr. Sajjad Ali Memon PhD, (China)	Engr. Syed Rizwan Ali Shah ME, (MUET, Pakistan)
Assistant Professors: Dr. Umair Ahmed Korai PhD, (UK)	

5.11.5 LABORATORY FACILITIES:

The department of Telecommunication Engineering is equipped with the required facilities, tools and equipment to conduct experiments in the field of Communication Communications and Networks.

The following laboratories are available at the Department of Telecommunication Engineering, MUET, Jamshoro:

1.	PC-1 Lab	7.	Cellular Communication Lab
2.	Optical Communication Lab	8.	Digital Signal Processing Lab
3.	Network & Protocol Design Lab.	9.	Radio Communication Lab
4.	Transmission & Switching Lab	10.	PC-2 Lab
5.	Analog & Digital Communication Lab.	11.	Advance Computing Lab
6.	Project Lab.	12.	Internet of Things Lab

5.11.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Software Defined Networks	2+1	2+3
2.	Optical Communication Systems and Networks	2+0	2+0
3.	Network Security	2+0	2+0
4.	Information Theory and Coding Techniques	2+0	2+0
5.	Applied Machine Learning	2+1	2+3
Second Semester			
1.	5G and Beyond Cellular Networks	2+0	2+0
2.	Network Programming	2+1	2+3
3.	Security Information Management	2+1	2+3

4.	Internet and Mobile Commerce	2+0	2+0
5.	Transport Network Systems	2+0	2+0

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**(Course Work) Subjects**	**Credit Hours**	**Marks**	**(Project/Thesis) Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Cloud Computing and virtualization	(2+1)	(2+3)	Project Thesis	(0+6)	(0+18)
2.	Internet of Things	(0+1)	(0+3)			
3.	Elective-I	(2+0)	(2+0)			
Fourth Semester						
1.	RF Planning & Optimization	(2+0)	(2+0)	Project Thesis	(0+6)	(0+18)
2.	Elective-II	(2+0)	(2+0)			
3.	Elective-III	(2+0)	(2+0)			

The following is a list of elective courses:

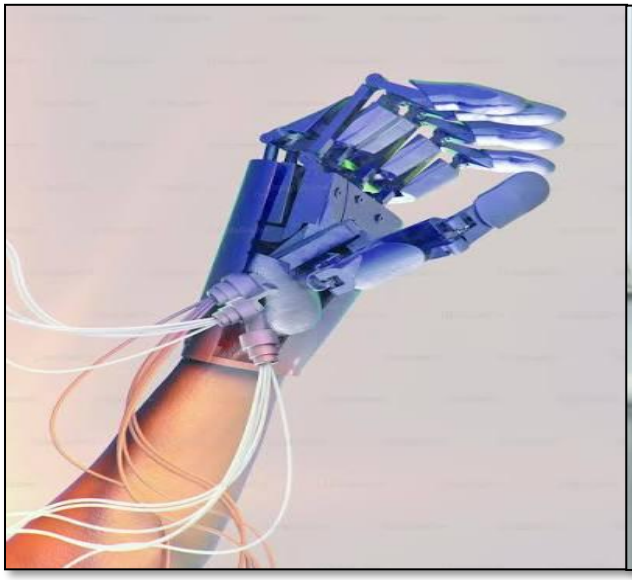
Sr. No.	Subjects	Credit Hours	Marks
1.	Applied Digital Signal Processing	2+0	2+0
2.	Mobile Application Security	2+0	2+0
3.	High Frequency Networks & Communication	2+0	2+0
4.	Blockchain Technology	2+0	2+0
5.	Business Continuity and Transformation	2+0	2+0
6.	Internet of Things Security	2+0	2+0
7.	Database Security	2+0	2+0
8.	Enterprise Network Design	2+0	2+0
9.	Vulnerability Assessment & Penetration Testing	2+0	2+0

5.11.7 CAREER OPPORTUNITIES:

Masters of Engineering in Communication Systems and Networks offers promising career opportunities in Pakistan, particularly in the growing telecom, IT, and defense sectors. With the rapid expansion of 5G, IoT, and digital infrastructure, professionals with expertise in communication networks are in demand for roles in network design, cybersecurity, and wireless communication. Key employers include major telecom companies like PTCL, Jazz, and Zong, as well as organizations like NESCOM and SUPARCO. Additionally, the rise of software-defined networking (SDN) and cloud services has opened doors to roles in network automation and IT consulting. Graduates can also pursue careers in academia and research institutions. Emerging technologies such as 6G, satellite communication, and smart grids further increase prospects. With the government's focus on Digital Pakistan initiatives, opportunities for network engineers in both public and private sectors are expected to grow significantly.

(B). DOCTORAL DEGREE PROGRAMS:

The Institute of Information & Communication Technologies currently offers following PhD Programs:	
1. Biomedical Engineering (PhD)	5. Mechatronic Engineering (PhD)
2. Computer system Engineering (PhD)	6. Software Engineering (PhD)
3. Electrical Engineering (PhD)	7. Telecommunication Engineering (PhD)
4. Electronic Engineering (PhD)	





5.12 BIOMEDICAL ENGINEERING (PH.D)

5.12.1 INTRODUCTION:

A PhD in Biomedical Engineering is the highest level of academic achievement in this interdisciplinary field, blending principles of engineering, biology, and medicine. This rigorous program equips students with the knowledge and skills to conduct cutting-edge research, design innovative medical devices, and develop advanced technologies to address complex healthcare challenges. Throughout their doctoral journey, candidates engage in original research, contribute to the field's knowledge base, and refine their problem-solving abilities. Whether pursuing academic careers, industry leadership, or healthcare innovation, a PhD in Biomedical Engineering empowers scholar pursuing their doctoral degree to be at the forefront of advancements in medical technology and to drive the future of healthcare.

5.12.2 ACADEMIC FACULTY:

Professor: Dr. Ahsan Ahmed Ursani PhD, (France)	Dr. Muhammad Amir Panhwar PhD, (China)
Associate Professor: Dr. Syed Amjad Ali PhD, (China)	**Assistant Professor:** Dr. Abdul Raheem Asari PhD, (Korea)
Associate Professor & Chairman: Dr. Abdul Qadir Ansari PhD, (MUET, Pakistan)	Dr. Maheen Surahio PhD, (China)

5.12.3 LABORATORY FACILITIES:

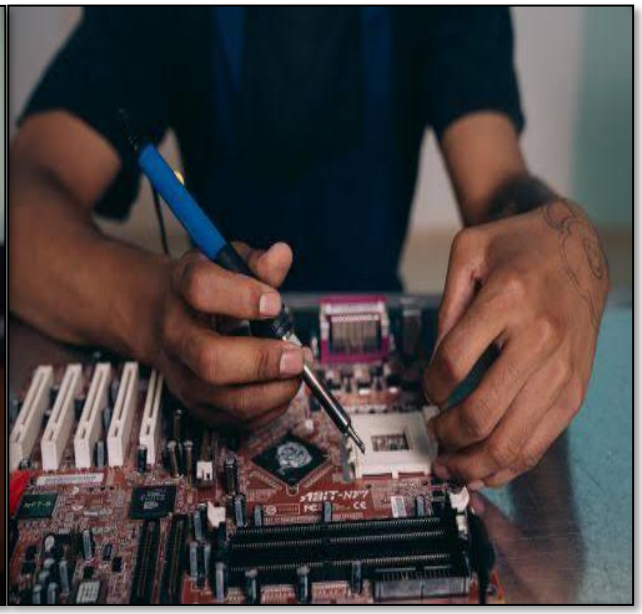
The following state-of-the-art laboratories are available for hands on experience. These laboratories provide high speed internet services in centralized environment.

1. Biomedical Computing Lab	2. Biomedical Instrumentation Lab
3. Biomedical Sciences Lab	4. Telemedicine and Research Lab
5. Biomedical Engineering Lab	6. Nano medicine Research Lab

5.12.4 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Name of Subject	Course Code	Marks			Credit Hours		
			Th.	Lab	Total	Th	Lab	Total
1.	Array Signal Processing	BM800	100	00	100	3	0	3
2.	Ultrasound and Biological Medium	BM810	100	00	100	3	0	3
3.	Therapeutic Ultrasound	BM820	100	00	100	3	0	3
4.	Non-Linear Acoustics and Ultrasound	BM830	100	00	100	3	0	3
5.	Medical Robotics	BM840	100	00	100	3	0	3
6.	Functional Foods and Nutraceuticals	BM850	100	00	100	3	0	3
7.	Recent Advances in Food Sciences and Technology	BM860	100	00	100	3	0	3
8.	Smart Actuators	BM870	100	00	100	3	0	3
9.	Advanced Machine Learning	BM880	100	00	100	3	0	3

5.13 COMPUTER SYSTEMS ENGINEERING (PH.D)

5.13.1 INTRODUCTION:

In today's rapidly evolving technological landscape, computer systems engineering stands as a pivotal field that drives innovation, economic growth, and societal advancement. As technology continues to reshape our world, it is crucial to consider the pressing need for a more comprehensive and focused approach to education in this field. One significant way to achieve this is a PhD program in Computer Systems Engineering.

PhD in Computer systems engineering encompasses the design, development, and optimization of complex computing systems, including hardware and software components. As technology becomes increasingly intricate, there is a growing demand for professionals who possess in-depth knowledge and expertise in this field. A PhD program would provide students with the opportunity to delve into these complexities, develop specialized skills, and become leaders in solving critical technological challenges.

5.13.2 OBJECTIVES:

The main objectives of the PhD in Computer Systems Engineering are as follows:

i). To develop skillset of student in automated image processing using machine vision and analytical techniques.
ii). To enable students to understand evaluation and trade-offs involved when making design decision at the Architectural level for single-core and multi-core state of the art microprocessors architecture and memory (cache) management systems from major industries.
iii). To make student aware of High-Performance Computing (HPC) methods of measuring and characterizing application and hardware performance of business-based system.
iv). To acquaint student with free, open-source and high-performance dynamic programming languages for technical computing.

5.13.3 ACADEMIC STAFF:

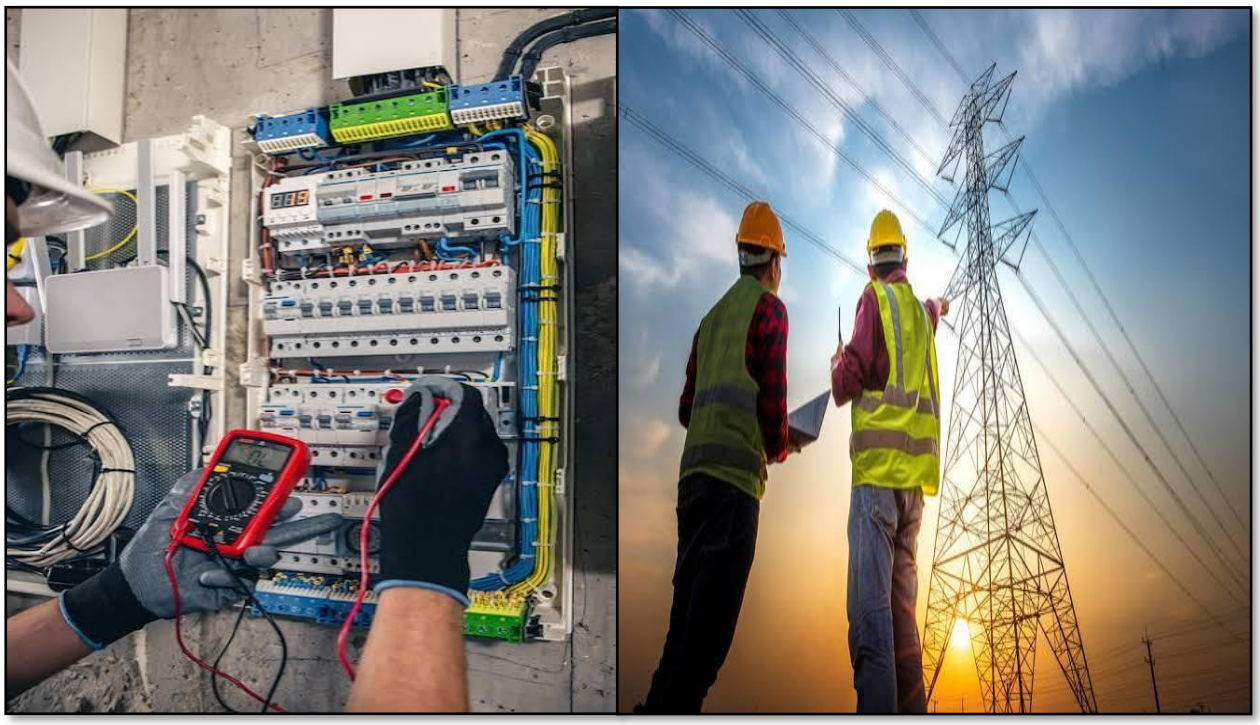
Professor Emeritus:	**Assistant Professors:**
Dr. Abdul Qadeer Khan Rajput PhD, (USA)	Dr. Zartasha Baloch PhD, (MUET, Pakistan)

Professor: Dr. Shahnawaz Talpur PhD, (China)	Dr. Adnan Ashraf PhD, (MUET, Pakistan)
Associate Professor & Chairperson: Dr. Sanam Narejo PhD, (Italy)	Dr. Irfan Ali Bhacho PhD, (South Korea)
Dr. Sammer Zai PhD, (South Korea)	Dr. Ali Asghar Manjotho PhD, (China)
Dr. Muhammad Ahsan PhD, (South Korea)	Dr. Fawad Ali Mangi PhD, (Australia)
Dr. Bushra Naz PhD, (China)	

5.13.4 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	SUBJECTS	CREDIT HOURS	MARKS
1.	Advanced Digital Image Processing	3 – 0	100 – 00
2.	Computational Models and Complexity	3 – 0	100 – 00
3.	Multi Core Microprocessor Architecture Design	3 – 0	100 – 00
4.	High Performance Computing	3 – 0	100 – 00
5.	Advanced Computer Architecture memory hierarchy design	3 – 0	100 – 00
6.	Parallel Computing Design	3 – 0	100 – 00
7.	Human Centered Design and Computer Interaction	3 – 0	100 – 00
8.	Machine Learning Techniques	3 – 0	100 - 00



5.14 ELECTRICAL ENGINERRING (PH.D)

5.14.1 INTRODUCTION:

The Department of Electrical Engineering, at the Mehran University of Engineering and Technology Jamshoro, is one of the most prestigious schools of learning in the field of Electrical Engineering in Pakistan. The graduates of the Department are not only ably serving in Pakistan but also represent the country in various industries and academic institutions abroad. The Department aspires that its students at both graduate and postgraduate level be better prepared to handle modern-life challenges, therefore, it is continuously striving to improve quality of education and research.

The Electrical Engineering department at MUET currently offers postgraduate program leading to PhD in Electrical Engineering. The Electrical department offers a broad range of electrical courses, both elementary and advanced, spanning the whole gamut of Electrical disciplines including areas such as Power Electronics, Electrical Machines, Power Engineering, Control Systems, High Voltage Engineering and Energy Management.

The research being carried out at the Department has direct bearing on the needs of national industry. A number of research papers are written every year by faculty members and postgraduate students which are normally published in major national and international journals or presented at international conferences.

5.14.2 PROGRAM OBJECTIVES:

i). To prepare students with advanced methodologies and research skills in the field of Electrical Engineering.

ii). To prepare students to conduct high-quality research with necessary innovative strategies for solving complex problems and disseminating it to scholarly and other audiences related to the field.

iii). To provide students to become productive citizens with high ethical and professional standards and have resilient managerial and leadership skills with strong communication to lead project stakeholders effectively.

5.14.3 ACEDEMIC STAFF:

Professor and Chairman: Dr. Syed Asif Ali Shah PhD, (Austria)	Dr. Mahesh Kumar PhD, (Malaysia)
Meritorious Professor: Dr. Zubair Ahmed Memon PhD, (MUET, Pakistan)	Dr. Abdul Hakeem Memon PhD, (China)
Professor & Dean, FEECE: Dr. Ashfaque Ahmed Hashmani PhD, (Germany)	Dr. Pervez Hameed Shaikh PhD, (Malaysia)
Professors: Dr. Abdul SattarLarik PhD, (MUET, Pakistan)	**Assistant Professors:** Engr. Abdul Jabbar Memon ME, (MUET, Pakistan)
Dr. Mukhtiar Ahmed Mahar PhD, (MUET, Pakistan)	Dr. Mansoor Ahmed Soomro PhD, (MUET, Pakistan)
Dr. Ali Asghar Memon PhD, (UK) - On Leave	Dr. Shoaib Ahmed Khatri PhD, (MUET, Pakistan)
Dr. Amir Mahmood Soomro PhD, (China)	Dr. Shafi Muhammad Jiskani PhD, (MUET, Pakistan)
Associate Professors: Dr. Anwar Ali Sahito PhD, (MUET, Pakistan)	Dr. Zuhaib Hussain Leghari PhD, (Malaysia)
Dr. Nayyar Hussain Mirjat PhD, (MUET, Pakistan) - On Lien	Dr. Rabail Memon PhD, (MUET, Pakistan)
Dr. Faheemullah Shaikh PhD, (China)	

5.14.4 LABORATORY FACILITIES:

The department is also equipped with state-of-the-art laboratories. Some of them are listed below:

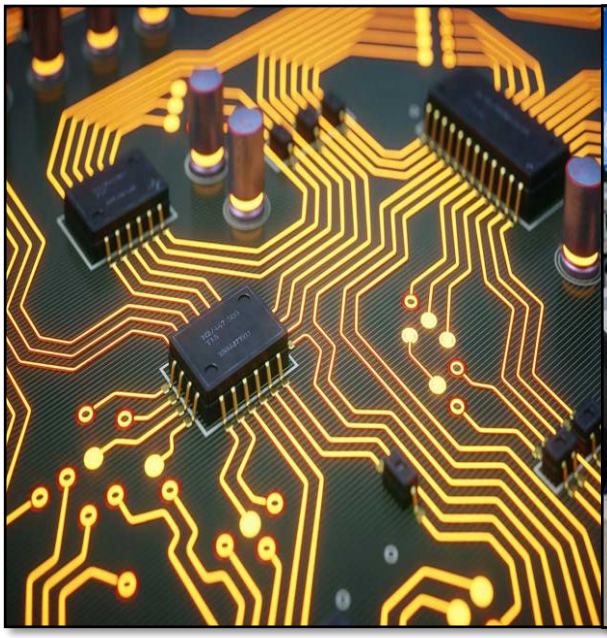
1.	Power System Lab	9.	Advance Computer Lab
2.	Applied Electricity Lab	10.	Clean Energy Lab
3.	Power Electronics Lab	11.	Electrical Workshop Lab
4.	Communication Lab	12.	Control and Automation Lab
5.	Electrical Machines Lab	13.	Electrical Power Transmission & Distribution Lab
6.	Computer Lab	14.	Electrical Circuit &Measurement Lab
7.	High Voltage Engineering Lab	15.	Alternate Energy Lab
8.	Communication Lab	16.	Calibration Lab

5.14.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Name of Course	CREDIT HOURS	MARKS
1.	Switched Reluctance Machines	3+0	100
2.	Power System Analysis & Protection	3+0	100

3.	Power System Distribution Network	3+0	100
4.	SCADA Based Systems	3+0	100
5.	Power Electronic Converter Dynamics and Control	3+0	100
6.	Magnetic Theory and Modern Rectifiers	3+0	1000
7.	FACTS Controllers	3+0	100
8.	Multilevel Inverters	3+0	100
9.	Renewable Integration in Distribution System	3+0	100
10.	Power Electronics	3+0	100
11.	Power System Quality	3+0	100
12.	Modern Control Engineering	3+0	100




5.15 ELECTRONIC ENGINEERING (PH.D)

5.15.1 INTRODUCTION:

The department of Electronic Engineering at MUET aims to provide the highest quality learning and research opportunities in the field of Electronic Engineering. The Department aims to achieve excellence in and explore the engineering principles that can be used to solve the problems in the field of electronic engineering to bring-in prosperity and technological advancement.

5.15.2 PROGRAM OBJECTIVES:

The objectives of the Electronics Engineering are as follows:

i). To prepare students with advanced methodologies and research skills in the field of Electronic Engineering.

ii). To prepare students to conduct high-quality research with necessary innovative strategies for solving complex problems and disseminating it to scholarly and other audiences related to the field.

iii). To provide students to become productive citizens with high ethical and professional standards and have resilient managerial and leadership skills with strong communication to lead project stakeholders effectively.

5.15.3 MAJOR AREAS OF THE PROGRAM:

• Control system design and automation	• Embedded System
• Real-time application of microprocessor & embedded system	• FPGA system
• Control and Modeling of dynamic systems	• Optical communication
• Artificial intelligence	• Internet of Things (IOT)
• Power Electronics	• WSN
• Wireless communication	

5.15.4 ACEDEMIC STAFF:

Meritorious Professor: Dr. Bhawani Shankar Chowdhry PhD, Post Doc (UK)	Dr. Zaigham Abbas Shah PhD, (USA)
Professor & Chairperson: Dr. Wajiha Shah PhD, (Austria)	**Assistant Professor:** Dr. Khalil-ur-Rehman Dayo PhD, (MUET, Pakistan)
Professor & Director, Iict: Dr. Arbab Nighat Kalhoro PhD, (China)	Dr. Kehkashan Asma PhD, (MUET, Pakistan)
Professor & Program Coordinator: Dr. Farida Memon PhD, (MUET, Pakistan)	Dr. Yasmeen Naz Panhwar PhD, (Aus)
Professor: Dr. Attiya Baqai PhD, (MUET, Pakistan)	Dr. Shoaib Rehman Soomro PhD (Turkey), Postdoc (Spain)
Associate Professor: Dr. Irfan Ahmed Halepoto PhD, (MUET, Pakistan)	Dr. Saba Baloch PhD, (Malaysia)

5.15.5 LABORATORY FACILITIES:

The department of Electronic Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Electronic Systems Engineering The following laboratories are available at the Department of Electronic Engineering, MUET, Jamshoro:

1. Instrumentation & Control Laboratory	7. Project Laboratory I & II
2. Analog Electronics Laboratory	8. Computing Laboratory
3. Digital System Design Laboratory	9. Research Laboratory
4. Embedded System Laboratory	10. Power Electronics & Circuit Design Lab.
5. Modeling and Simulation Laboratory	11. AI laboratory
6. Communication System Laboratory	

5.15.6 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	SUBJECTS	CREDIT HOURS	MARKS
1.	VLSI Design	3+0	100
2.	Instrumentation and System	3+0	100
3.	Modelling and Simulation of Advanced Systems	3+0	100
4.	Embedded System Design and Applications	3+0	100
5.	FPGA Based System Design	3+0	100
6.	Linear Multivariable Control Systems	3+0	100
7.	Advanced Control systems	3+0	100

5.15.7 CAREER OPPORTUNITIES:

A PhD in Electronic Engineering opens diverse career opportunities in academia, industry, and research organizations. Graduates can pursue academic careers as university professors, researchers, and postdoctoral fellows, contributing to cutting-edge advancements and training future engineers. In industry, they are highly valued for roles in semiconductor design, embedded systems, FPGA/ASIC development, telecommunications, robotics, automation, machine learning hardware, and IoT applications. Research-intensive positions are also available in government labs, defense organizations, and R&D centers of multinational companies, focusing on developing next-generation electronic systems and technologies. Additionally, PhD holders can explore leadership roles in technology innovation, consultancy, and entrepreneurship, leveraging their expertise to drive industrial solutions and emerging tech startups.




5.16 MECHATRONIC ENGINEERING (PH.D)

5.16.1 INTRODUCTION:

Mechatronics is fusion of mechanical, computer and electronic engineering. The PhD program contains course work and research with an aim to design and develop mechatronic systems and devices. The graduates qualified in the field of mechatronics are in demand as industrial and other systems have changed from electro-mechanical to fully automated systems. A PhD graduate is expected to be equipped with the necessary knowledge to design, develop and control mechatronic and robotic systems and devices.

5.16.2 AIMS AND OBJECTIVES:

The main aim of the program is to produce PhDs that are equipped with theoretical and practical knowledge spanning multiple disciplines and who are able to design and develop Mechatronic products and systems for various applications. The PhDs in Mechatronic Engineering will develop novel solutions for agricultural, industrial, and medical sectors. Mehran University is already running Bachelor's and Master's level programs in Mechatronic Engineering. The PhDs produced shall help deliver state-of-the-art knowledge to those undergraduate and postgraduate students. They will also conduct cutting-edge research.

5.16.3 SCOPE AND EXPECTED OUTCOMES:

After successful completion of the program, a graduate will be able to:

i). Demonstrate skills peculiar to independent researcher in the field of Mechatronic Engineering.
ii). Contribute towards the extension of knowledge boundaries in the domain of Mechatronic Engineering.
iii). Innovate solutions aimed at progress of the society.

5.16.4 ACADEMIC STAFF:

Professor & Chairperson: Dr. Jawaid Daudpoto PhD, (UK)	**Associate Professor:** Dr. Shadi Khan Baloch PhD, (Turkey)
Associate Professor: Dr. Saifullah Samo PhD, (China)	

5.16.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Course Title	CHs
1.	Micro and Nano Fabrication	03
2.	Photonic Devices	03
3.	Non-Linear Control Systems	03
4.	Advanced Topics in Control Systems	03
5.	Advances in Manufacturing Technologies	03
6.	Rapid Prototyping and Manufacturing	03
7.	Advanced Information Systems for Manufacturing	03
8.	Robotic Manipulation	03
9.	Robot Motion Planning	03
10.	Wearable Sensors	03
11.	Advanced Mechatronics System Design	03
12.	Pattern Recognition and Image Processing	03
13.	Any other approved relevant course	-



5.17 SOFTWARE ENGINEERING (PH.D)

5.17.1 INTRODUCTION:

The Department offers postgraduate programs leading to a PhD degree in the discipline of Software Engineering. The program provides in-depth knowledge of various aspects of Software Engineering. It develops the capabilities of analysis, design, and implementation of Software Engineering Methods and Principles. This discipline addresses the key aspects of modern Software Engineering through integrated courses that meet the requirements of emerging markets of professional Software Engineers at national and international levels. These courses are in conformance with the current and future needs of the software industry.

To meet the latest trends in software and hardware technologies, the department is equipped with the following state-of-the-art laboratories, which maintain high standards through the latest hardware and software support. The department also aims to produce postgraduates who are equipped to both work in the software industry and pursue research in software engineering.

The department also aims to produce postgraduates who are equipped to both work in the software industry and pursue research in software engineering.

- Computational Linguistic and Interactive E-Learning Lab
- Visual Informatics, Image Processing, 3-D Modeling, Visualization Laboratory
- Data Warehousing and Management Laboratory
- Software Quality Assurance and Testing Laboratory
- Software Research and Development Laboratory
- Parallel Programming, Cluster Computing, Grid Research and Storage Management Laboratory

Laboratories maintain high standards through latest hardware and software support. Recently the Labs are updated with latest software applications equipped with the latest engineering software applications including MATLAB, ORACLE, NETBEANS and DREAMWEAVER. The laboratory rooms are spacious, equipped with air conditioners and safety/health standards to accommodate 50 students at a time with 1:1 student and PC ratio. Many renowned companies related to the IT field offer internships to the students of this department; many of our students are remained engaged in the internships to shine their skills and understand the market standards.

5.17.2 MISSION:

To provide a technically sound ambiance of learning and realize the frequently changing traits of the software industry to pursue sustainable socio-economic growth with the sense of ethics, professionalism, and leadership to serve the community and humanity at large.

5.17.3 PROGRAM OBJECTIVES:

The general objective of the degree is to train professionals capable of using a systematic, disciplined, quantifiable approach to develop, operate and maintain software and to establish and use reliable software, which works efficiently on real equipment, and to estimate the costs involved. The objectives of Software Engineering are as follows:

i). To provide post-graduates in-depth knowledge of planning, designing, and implementing software systems in accordance with the job market.
ii). To provide students with knowledge of advanced software engineering skills to apply creative and leading roles in professional and research areas.
iii). To prepare post-graduates to measure the reliability and feasibility of software applications for cost-effective and sustainable development.

5.17.4 ACADEMIC STAFF:

Professor: **Dr. Sania Bhatti** PhD, (UK)	**Dr. Isma Farah Siddiqui** PhD, (South Korea)
Professor & Chairman: **Dr. Qasim Ali Arain** PhD, (China)	**Assistant Professor:** **Dr. Areej Fatemah** PhD, (MUET, Pakistan)
Associate Professor: **Dr. Naeem Ahmed Mahoto** PhD, (Italy)	**Dr. Syed M. Shehram Shah** PhD, (Australia)
Dr. Mohsin Ali Memon PhD, (Japan)	**Dr. Rabeea Jafferi** PhD, (Malaysia)

5.17.5 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Advanced Multimedia Technology	3+0	100
2.	Data Mining Algorithms	3+0	100
3.	Text Mining & Language Processing	3+0	100
4.	Programming the Real Time Systems	3+0	100
5.	Research Programming & Analyzing Results	3+0	100
6.	Semantic based Software Development	3+0	100
7.	Big Data Analytics	3+0	100
8.	Design and Modeling Software Architecture	3+0	100
9.	Computer Network Design & System Security	3+0	100



5.18 TELECOMMUNICATION ENGINEERING (PH.D)

5.18.1 INTRODUCTION:

The establishment of the Department of Telecommunication, MUET, in 2001 was to produce graduates to meet the market requirement in the areas such as Mobile and Wireless Communication, Multimedia and Broadband Communication, Communication Networks etc.

The PhD in Telecommunication program was launched in 2005. It is a comprehensive research program that focuses on advanced studies in the field of telecommunications. This program provides a platform for scholars to pursue their doctoral research and contribute to the knowledge and advancement of the telecommunication industry. The program offers a diverse range of research areas and specializations, allowing students to delve into their areas of interest and expertise. Through rigorous research work and academic guidance, the program aims to produce highly skilled researchers and scholars who can make significant contributions to the field of telecommunications in Pakistan and beyond.

The PhD in Telecommunication program at Mehran University in Jamshoro is dedicated to fostering academic excellence, innovation, and intellectual growth, providing an ideal environment for aspiring researchers to pursue their passion and contribute to the advancement of telecommunications.

5.18.2 PROGRAM MISSION:

To produce quality telecommunication engineers with broad as well as in-depth technical knowledge for information, computer network and mobile industry with the aim of imparting skills to efficiently design, plan, operate and maintain information and communication systems.

5.18.3 PROGRAM OBJECTIVES:

The program objectives of the PhD in Telecommunication degree program are:

i). Graduates will be skilled researchers capable of conducting and disseminating original, impactful research in telecommunications and related fields, driving innovative solutions and advancements.

ii). Graduates should be able to recognize ethical and professional responsibilities and consider the impact of their work on society.

iii). Graduates will have a strong foundation in the latest telecommunications technologies, enabling them to adapt to evolving industry trends and pursue lifelong learning opportunities to maintain their professional relevance.

5.18.4 ACADEMIC STAFF:

Professor & Chairperson: Dr. Faisal Karim Shaikh PhD, (Germany)	Dr. Imran Ali Qureshi PhD, (China)
Professor: Dr. Abdul Waheed Umrani PhD, (Singapore)	Dr. Sajjad Ali Memon PhD, (China)
Dr. Nasrullah Pirzada PhD, (Malaysia)	**Assistant Professor:** Dr. Umair Ahmed Korai PhD, (UK)
Dr. Zafi Shehran Shah PhD, (UK)	Dr. Zulfiqar Ali Arain PhD, (China)
Associate Professor: Dr. Fahim Aziz Umrani PhD, (UK)	Dr. Syed Mohsin Ali Shah PhD, (China)
Dr. Abdul Latif Memon PhD, (China)	

5.18.5 LABORATORY FACILITIES:

The department of Telecommunication Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Cyber Security. The following laboratories are available at the Department of Telecommunication, MUET, Jamshoro:

1.	Analog & Digital Communication Lab.	7.	Cyber Security Lab
2.	Project Laboratory	8.	Cellular Communications Lab
3.	Transmission and Switching Lab.	9.	Advanced Computing Lab
4.	Networking and Protocol Design Lab.	10.	Digital Signal Processing Lab
5.	Optical Communication & Photonics Lab.	11.	Radio Communication Lab
6.	PC Laboratory I	12.	Internet of Things (IoT) Lab

5.18.6 COURSES OFFERED:

The following is a list of elective courses:

Sr. No.	Subjects	Course Code	Credit Hours	Marks
1.	Advanced Digital Signal Processing	TL9152	3+0	100
2.	Smart Antenna Systems for Wireless Networks	TL9182	3+0	100
3.	Optical Communication Systems and Networks	TL9132	3+0	100
4.	Spread Spectrum Communications	TL9102	3+0	100
5.	Internet of Things	TL9122	3+0	100
6.	Crowd Sourcing and Big Data Analytic	TL9140	3+0	100
7.	Software Defined Networks	TL9160	3+0	100
8.	Wireless Sensor Networks	TL9112	3+0	100
9.	Vulnerability Assessment &Pen testing in Cybersecurity	TL9200	3+0	100
10.	Machine Learning for Telecommunication Engineering	TL9210	3+0	100
11.	Wireless Communication: 5G and beyond	TL9220	3+0	100
12.	Photonic Devices	TL9230	3+0	100

13.	Network Science	TL9240	3+0	100
14.	Network Security	TL9250	3+0	100

5.18.7 CAREER OPPORTUNITIES:

Telecommunication works within a number of industries based on Internet and computing technologies, telephone networks, radio wave transmission and reception, satellite communication, radar and navigation, etc.

PhD Graduates of Telecommunication Program can apply technical knowledge and expertise to work as Academicians, researchers and industry professionals. Many posts include elements of both managerial and technical responsibilities. The technical aspect of the role includes using specialist knowledge to design and deliver solutions, as well as providing technical guidance and security assurance to others within the organization.

Following is the list of organizations where the Telecom graduates could be employed:

- **Industries In Pakistan**
  - Pakistan Telecommunication Corporation Limited (PTCL)
  - Pakistan Telecommunication Authority (PTA)
  - Wateen Telecom
  - Warid Telecom
  - Jazz (VimpelCom and Dhabi Group)
  - Telenor (Telenor Group)
  - Zong (China Mobile)
  - Ufone (PTCL+Ehtisalat)
  - SCO (Special Communication Organization initially started from Azad Kashmir and Gilgit Baltistan, now available throughout Pakistan)
  - Telecard Limited
  - Wi-Tribe Pakistan Limited
  - DV Com Data (Pvt.) Limited
  - WorldCall Telecom Ltd.
  - Cyber Internet Services Limited
  - LINKDotNET Telecom Ltd.
  - Super Dialogue (Pvt.)
  - MyTel (Pvt.) Ltd.
  - Metrotel (Pvt.) Ltd.
  - Sharp Communications (Pvt.) Ltd.
  - Multinet Pakistan
  - EZY Pakistan
  - New Horizon Pakistan

- **Vendors In Pakistan**
  - Nokia Siemens Networks (NSN) – Huawei
  - Ericson
  - ZTE
  - Nortel
  - Myson Telecom
  - Combit Telecom
  - People’s Logic Telecom

- **Satellite TV Channels in Pakistan**
  - Numerous groups of channels such as Sindh TV, Geo Group, Dawn Group etc.

- **Pakistan Forces**
    - Pakistan Army (Communication Core)
    - Pakistan Navy (Communication Sector)
    - Pakistan Air Force (Communication Sector)
    - Maritime Technologies Complex (MTC)
    - Pakistan Space and Upper Atmosphere Research Commission (SUPARCO)

- **Aeronautical Companies**
    - Civil Aviation Authority of Pakistan
    - Civil Aviation Training Institute
    - Pakistan International Airline (PIA)
    - Airblue
    - Air Indus
    - Shaheen Air

6. US-PAKISTAN CENTER FOR ADVANCED STUDIES IN WATER

The USPCAS-W is part of a broader higher education initiative launched in Pakistan with financial support from the United States Government through its Agency for International Development (USAID). The objective of this initiative is to enhance the capacity of Pakistan's higher education institutions to contribute solutions to Pakistan's development challenges. The initiative entails the establishment of three Centers for Advanced Studies in water, energy and agriculture & food security in four selected Pakistani universities. USPCAS-W is one of the three Centers focused on identifying and developing solutions for the multifaceted water-related challenges facing the country. The Center is housed at the MUET at Jamshoro. (http://water.muet.edu.pk). The Center intends to contribute solutions to Pakistan's water-related challenges by educating and training the next generation of water sustainability leaders through advanced academic training in different water-related disciplines. The tangible deliverables of the Center include postgraduate degree programs, applied policy research, facilitation of public- private partnerships, and provision of policy advice in a range of water-related disciplines.

The US-Pakistan Center for Advanced Studies in Water offers following Master's and PhD Degree Programs in:			
1.	Environmental Engineering (MS)	1.	Environmental Engineering (PhD)
2.	Integrated Water Resources Management (MS)	2.	Integrated Water Resources Management (PhD)
3.	Hydraulics, Irrigation & Drainage (MS)	3.	Hydraulics, Irrigation & Drainage (PhD)
4.	Water, Sanitation & Health Science (MS)	4.	
5.	Climate Change & Environmental Informatics (MS)	5.	

(A). MASTER'S DEGREE PROGRAMS:

6.1 ENVIRONMENTAL ENGINEERING (MS)

6.1.1 INTRODUCTION:

The Environmental Engineering program provides an in-depth understanding of the principles and practices essential for protecting and improving environmental quality. It emphasizes advanced learning in conventional and emerging areas of environmental engineering, including physical, chemical, and biological treatment processes, design of water and wastewater treatment systems, air and noise pollution control, hazardous and solid waste management, and environmental impact assessment.

6.1.2 PROGRAM MISSION:

The Environmental Engineering (Env.E) program focuses on enhancing the knowledge and capacities of students in areas/subjects such as access to drinking water and sustainable sanitation, sustainable development goals in water and water and wastewater treatment technologies, management of rural water supply schemes, gender and Env.E, and research in Env.E Sector, targeting Sustainable Development Goal 6.3.

6.1.3 PROGRAM OBJECTIVES:

The educational objectives of the Env.E program are as follows:

i). To equip our students with professional skills, expertise, and knowledge that could be applied in the water and environmental engineering profession and assist our graduates in pursuing successful careers as environmental engineers and water experts.

ii). To engage our graduates in designing innovative environmental and water-related solutions by involving them in advanced research in water and environmental engineering disciplines.

iii). To embed lifelong learning skills and understanding of ethical responsibility in professional practices in our graduates

iv). To liaison the academic research activities with the industry and community needs

6.1.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Professor & Director: Dr. Kamran Ansari PhD, UK	**Assistant Professor:** Dr. Syeda Sara Hassan PhD, Australia
Meritorious Professor: Dr. Rasool Bux Mahar PhD, China, Post Doctorate, USA.	**Assistant Professor:** Dr. Tanveer Ahmed Gadahi PhD, Italy.
Associate Professor: Dr. Uzma Bhanbhro PhD, MUET, Pakistan	

6.1.5 LABORATORY FACILITIES:

The US-Pakistan Center for Advanced Studies in Water is equipped with the required facilities, tools and equipment to conduct experiments. The following laboratories are available at the USPCAS-W, MUET, Jamshoro:

1.	Advanced Water & Wastewater Quality Control Lab	5.	GIS & Remote Sensing Lab
2.	Pilot Scale Water & Wastewater Treatment Lab	6.	Computer and Software Lab
3.	Soil and Water Analysis Lab	7.	Microbiology
4.	Hydraulics Lab		

6.1.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Professional Development and Practice	3	100
2.	Solid and Hazardous Waste Management	3	100
3.	Air and Noise Pollution Control Engineering	3	100
4.	Physical, Chemical, and Biological Processes	3	100
Second Semester			
1.	Water Law, Policy and Community	3	100

2.	Environmental Economics	3	100
3.	Water and Wastewater Treatment Design	3	100
4.	Environmental Impact Assessment	3	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3	100	Thesis	6	0
2.	Elective-II	3	100			
Fourth Semester						
3.	Elective-III	3	100	Thesis	6	0
4.	Elective-IV	3	100			

- **Elective Courses:**
    - Occupational Health & Safety (ENE-701)
    - Biotechnology and Nanotechnology for Environmental Applications (ENE-702)
    - Environmental Management and Sustainability (ENE-703)
    - Advanced Water Quality Assessment (ENE-704)
    - Advanced Environmental Chemistry (ENE-705)
    - Design of Natural Treatment Systems (ENE-706)

6.1.7 CAREER OPPORTUNITIES:

Employment prospects exist in a variety of sectors, including government and semi-government departments such as the Environmental Protection Agency (EPA) Sindh, Sindh Irrigation Department, Public Health Engineering Department (PHED), Sindh Coal Authority, and Sindh Mines and Minerals Department. Graduates are also employed in industries like Engro Corporation, Lucky Cement, ICI Pakistan, K-Electric, and other process and manufacturing industries. Consultancy firms, engineering design companies, and research and development organizations also recruit environmental engineers. International and non-governmental organizations such as UNDP, UNEP, World Bank, USAID, and WWF offer further career pathways in environmental sustainability and climate resilience. Additionally, many graduates pursue academic and research careers in universities and research institutions, contributing to innovation, technology development, and evidence-based environmental policymaking.

6.2 INTEGRATED WATER RESOURCES MANAGEMENT (MS)

6.2.1 INTRODUCTION:

The IWRM program enhances students' knowledge and capacities to deal with multi- disciplinary aspects of water resource allocation and use under conditions of uncertainty. Key topics constituting the program include: principles of IWRM, hazard planning and management, inter-sectoral allocation and use, water governance, institutions and policies, water dispute management, water valuation, economics of water management, and GIS and remote sensing in water resources. Given the emerging complexities in the water sector, the need for coordinated decision-making across sectors and scales has always been felt. IWRM provides a platform where young leaders are trained in interdisciplinary concepts and methods for integrated water resources management to meet the complex sustainability challenges.

6.2.2 PROGRAM MISSION:

To produce future leaders and qualified country specialists in the water sector, enhancing student's knowledge and capacities to deal with multi-disciplinary aspects of water resource allocation and use under conditions of uncertainties.

6.2.3 PROGRAM OBJECTIVES:

The objectives of the MS IWRM program are as follows:

i). To produce highly qualified professionals having the necessary skills needed to innovative solutions to water problems of Pakistan

ii). To train the students with the latest tools and technologies, and models to provide more robust solutions to manage the limited water resources under uncertainty.

6.2.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Director: Dr. Kamran Ansari PhD, UK	**Senior Research Fellow:** Dr. Arjumand Zaidi PhD, USA.
Emeritus Professor: Dr. Bakhshal Khan Lashari PhD, (Poland), Post-doctoral Fellow (USA)	**Associate Professor:** Dr. Muhammad Ali PhD, Pakistan

6.2.5 LABORATORY FACILITIES:

The US-Pakistan Center for Advanced Studies in Water is equipped with the required facilities, tools and equipment to conduct experiments. The following laboratories are available at the USPCAS-W, MUET, Jamshoro:

1. Advanced Water & Wastewater Quality Control Lab	5. GIS & Remote Sensing Lab
2. Pilot Scale Water & Wastewater Treatment Lab	6. Computer and Software Lab
3. Soil and Water Analysis Lab	7. Microbiology
4. Hydraulics Lab	

6.2.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Professional Development and Practice	3	100
2.	Integrated Water Resources Management: Principles & Applications	3	100
3.	Sustainable Development and WEF Nexus	3	100
4.	Applications of GIS and Remote Sensing in Water Resources	2+1	100
Second Semester			
1.	Water Law, Policy, and Community	3	100
2.	Climate Change and Water Resources	3	100
3.	Hydro-informatics: Data Management and Analysis	3	100
4.	Hazard Planning and Risk Management	3	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3	100	Thesis	6	0
2.	Elective-II	3	100			
Fourth Semester						
1.	Elective-III	3	100	Thesis	6	0
2.	Elective-IV	3	100			

- **Elective Courses:**
    - Model Applications in IWRM (IWRM-701)
    - Groundwater Hydrology (IWRM-702)
    - Flood Risk Management and Resilience (IWRM-703)
    - Water Conservation and Rainwater Harvesting (IWRM-704)
    - Irrigation Water Management (HID-651)
    - Watershed Modeling (HID-705)

6.2.7 CAREER OPPORTUNITIES:

IWRM programs offer opportunities to work in different aspects of water resources governance, management, and planning and implementation. The major areas include:

- Water Resources Planning and Management
- Water Governance
- Environmental Impact Assessment
- Hazard and Disaster Management
- Flood Risk Assessment and Mapping
- Disaster Risk Reduction and Planning
- Ground Water Assessment and Modelling
- Sustainable Management and Natural Resource Management
- Hydrology and Watershed Management
- Green Engineering
- Public Health and Land Pollution Control
- Climate Change Modelling, Adaptation and Resilience Planning
- GIS and Remote Sensing Modelling
- River Basin and Catchment Management

- **Potential Employers:**

    - Ministry of Water Resources Management,
    - Ministry of Climate Change,
    - Ministry of Planning, Development & Special Initiatives
    - Planning Commission of Pakistan,
    - Planning and Development Departments,
    - Pakistan Council of Research in Water Resources
    - Pakistan Council of Scientific and Industrial Research
    - Environmental Protection Agencies
    - UN Agencies (UNDP, FAO, UNEP, UNIDO etc)
    - Irrigation Departments,
    - Agriculture Departments,
    - Forest Departments,
    - Public Health Engineering and Development Departments,
    - Municipal Corporations
    - Non-Governmental Organizations (International, National, and Local)
    - Research and Academics Organizations (International and National)
    - Private Firms and Organizations,
    - Water and Sanitation Agencies,
    - Urban Development Units,
    - Multi-National Companies (MNCs).



6.3 HYDRAULICS, IRRIGATION & DRAINAGE (MS)

6.3.1 INTRODUCTION:

The HID program educates students in the field of open channel and groundwater hydraulics in combination with engineering principles, and supports useful plant life, with minimum degradation of soil and water resources. The primary objective is to understand soil, water and plant relationships and how they can be applied to better manage surface and groundwater resources in the production of food and fiber. The HID program, especially at the post-graduate level, is structured to be interdisciplinary. In addition to increasing their understanding of engineering fundamentals, students are encouraged to explore and appreciate the environmental and ecological effects of irrigated agriculture. This is important since irrigated agriculture has come under increasing criticism for being a heavy user of water, combined with low land and water productivity and environmental damage to soil and water resources.

6.3.2 PROGRAM MISSION:

The MS in Hydraulics, Irrigation and Drainage (HID) program educates students in the field of open channel and groundwater hydraulics in combination with engineering principles and to support useful plant life, with minimum degradation of soil and water resources. The primary objective is to understand soil, water and plant relationships and how they can be applied to better manage surface and groundwater resources in the production of food and fiber. The HID Engineering program, especially at the graduate level, is structured to be interdisciplinary. In addition to increasing their understanding of engineering fundamentals, students are encouraged to appreciate environmental and ecological effects of irrigated agriculture. This is important since irrigated agriculture has come under increasing criticism for being a heavy user of scarce water resources due to climate change and for polluting soil and water resources.

6.3.3 PROGRAM OBJECTIVES:

The objectives of the MS HID program are as follows:

- Participating in professional engineering practices through the analysis, evaluation, and improvement of quality and efficiency of hydraulics/hydrologic processes using appropriate engineering tools and techniques.
- To produce qualified professionals having necessary skills needed to innovative solutions of water related problems.
- Pursue professional growth through moral and continuous learning attitude.

6.3.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Ghulam Hussain Dars PhD (Pakistan)	**Associate Professor:** Dr. Ghulam Hussain Dars PhD (Pakistan)
Professor Dr. Kamran Ansari PhD, (UK)	**Assistant Professor:** Mr. Waqas Ahmed (on study leave) M.Sc. (Germany)
Dr. Abdul Latif Qureshi PhD (Pakistan)	

6.3.5 LABORATORY FACILITIES:

The US-Pakistan Center for Advanced Studies in Water is equipped with the required facilities, tools and equipment to conduct experiments. The following laboratories are available at the USPCAS-W, MUET, Jamshoro:

1. Advanced Water & Wastewater Quality Control Laboratory	1. GIS & Remote Sensing Laboratory
2. Pilot Scale Water & Wastewater Treatment Laboratory	2. Computer & Software Laboratory
3. Soil & Water Analysis Laboratory	3. Microbiology Laboratory
4. Hydraulics Laboratory	4.

6.3.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Professional Development and Practice	3	100
2.	Agricultural Land Drainage	3	100
3.	Open Channel Hydraulics	3	100
4.	Applications of GIS and Remote Sensing in Water Resources	2+1	100
Second Semester			
1.	Water Law, Policy and Community	3	100
2.	Irrigation Water Management	3	100
3.	Groundwater Hydraulics	3	100
4.	Hydro-informatics: Data Management and Analysis	3	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3	100	Thesis	6	0
2.	Elective-II	3	100			
Fourth Semester						

3.	Elective-III	3	100	Thesis	6	0
4.	Elective-IV	3	100			

- **Elective Courses:**

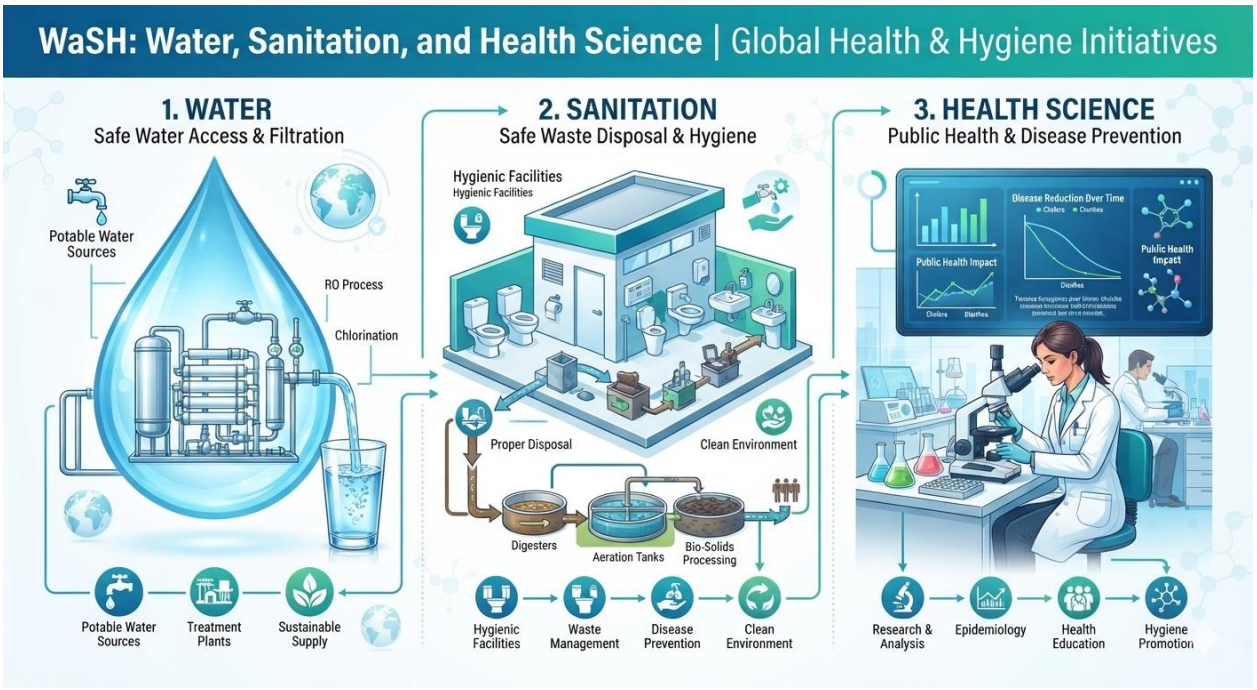
  - Design of Hydraulic Structures (HID-701)
  - Operational Management of Canal Water (HID-702)
  - Watershed Modeling (HID-705)
  - Climate Change and Water Resources (IWRM-651)
  - Model Applications in IWRM (IWRM-701)
  - Flood Risk Management and Resilience (IWRM-703)
  - Water Conservation and Rainwater Harvesting (IWRM-704)

6.3.7 CAREER OPPORTUNITIES:

HID programs offer opportunities to work in different aspects of water management, infrastructure development, and environmental sustainability. Graduates can pursue careers in both the public and private sectors, as well as with international development agencies and research institutions. Typical areas of employment include:

- Water Resources Planning and Management
- Irrigation and Drainage System Design
- Environmental Impact Assessment and Compliance
- Climate Change Adaptation and Policy Development
- Hydrology and Hydraulic Engineering
- Flood and Drought Risk Management
- GIS and Remote Sensing Applications in Water Sector
- Research and Academia

Professionals holding an HID degree are well-equipped to serve in organizations such as Irrigation Departments, WAPDA, NESPAK, SUPARCO, Provincial Water Authorities, Environmental Protection Agencies, and international donor-funded projects like World Bank, UNDP, ADB, and IWMI.



6.4 WATER, SANITATION & HEALTH SCIENCE (MS)

6.4.1 INTRODUCTION:

In contrast to most 'traditional' degrees in environmental engineering, individuals in this program will need to have the knowledge, skills and attitudes to assess the needs of a community, design, evaluate and implement technical solutions to the deficiencies of water supply and sanitation that are appropriate for a given community and sustainable, through a process of community engagement and mobilization, and in partnership with like-minded organizations whose focus is on health promotion and education. Individuals trained in this program will have the skills and knowledge to work effectively with the community and community-based organizations and the local political structure to effectively implement water and sanitation interventions, assess the functioning and impacts of these systems, and identify and implement solutions to improve the effectiveness and sustainability of existing systems.

6.4.2 PROGRAM MISSION:

Individuals trained in this program will have the skills and knowledge to work effectively with community and community-based organizations and the local political structure to effectively implement water and sanitation interventions, assess the functioning and impacts of these systems, and identify and implement solutions to improve the effectiveness and sustainability of existing systems.

6.4.3 PROGRAM OBJECTIVES:

- To prepare WaSH Sciences students for fulfilling careers that contribute to the success of the community.
- To educate WaSH Sciences students thoroughly the skill and attitudes to assess the needs of a community.
- To develop skills to design, evaluate and implement technical solutions to the deficiencies of water supply and sanitation that are appropriate for a given community and sustainable, through a process of community engagement and mobilization.
- To develop the skills pertinent to the design process, including the students' ability to formulate problems, to think creatively, to communicate effectively, to synthesize information and to work collaboratively in partnership with like-minded organizations

whose focus is on health promotion and education.

- To instill in our students an understanding of their professional, social, and ethical responsibilities to engage in life-long learning; and develop their people, management, and leadership skills.

6.4.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Dr. Naveed Ahmed PhD, (South Korea)	**Associate Professor:** Dr. Naveed Ahmed PhD, (South Korea)
Professor: Dr. Kamran Ansari PhD, (UK)	**Visiting Faculty**: Dr. Sohail Ahmed Bijarani Assistant Professor, LUMHS, Jamshoro

6.4.5 LABORATORY FACILITIES:

The US-Pakistan Center for Advanced Studies in Water is equipped with the required facilities, tools and equipment to conduct experiments. The following laboratories are available at the USPCAS-W, MUET, Jamshoro:

1. Advanced Water & Wastewater Quality Control Laboratory	5. GIS & Remote Sensing Laboratory
2. Pilot Scale Water & Wastewater Treatment Laboratory	6. Computer & Software Laboratory
3. Soil & Water Analysis Laboratory	7. Microbiology Laboratory
4. Hydraulics Laboratory	8.

6.4.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Professional Development and Practice	3	100
2.	Water and Health	3	100
3.	Small Water System Design	3	100
4.	Chemistry & Biology of WaSH	3	100
Second Semester			
1.	Water Law, Policy and Community	3	100
2.	WaSH and Community	3	100
3.	Biostatistics and Epidemiology	3	100
4.	Sanitation Systems, Waste Reuse and Hygiene	3	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3	100	Thesis	6	0
2.	Elective-II	3	100			

Fourth Semester						
1.	Elective-III	3	100	Thesis	6	0
2.	Elective-IV	3	100			

- **Elective Courses:**

  - WaSH Assessment and Practical Management (WaSH-701)
  - Climate Change and Water Security (WaSH-702)
  - Community Engagement for WASH (WaSH-703)
  - WaSH in Emergency (WaSH-704)
  - Sustainable development and innovation technologies (WaSH-705)
  - Application of GIS and Remote Sensing in Water Resources (IWRM-615)

6.4.7 CAREER OPPORTUNITIES:

WaSH programs offer opportunities to work in different aspects of water supply, sanitation systems, hygiene promotion, and public health improvement. The major areas include:

- Community-based water supply and sanitation projects
- Urban and rural hygiene programs
- Emergency WaSH interventions
- Policy and planning

Graduates can pursue careers with government departments, non-governmental organizations (NGOs), international development agencies, and private consulting firms. Typical roles include WaSH Engineer, Project Manager, Hygiene Promotion Officer, Environmental Health Specialist, and Monitoring & Evaluation Expert. With increasing focus on sustainable development and climate resilience, professionals in the WaSH sector play a vital role in improving health and living standards across communities.



6.5 CLIMATE CHANGE & ENVIRONMENTAL INFORMATICS (MS)

6.5.1 INTRODUCTION:

This interdisciplinary master's program combines climate science, data science, and informatics with policy and sustainability studies. Students will learn to model Earth systems, analyze big environmental datasets, and design data-driven solutions to mitigate and adapt to climate change.

6.5.2 PROGRAM MISSION:

To equip graduates with advanced scientific knowledge, informatics tools, policy insights, and nature-based solutions to develop data-driven strategies for climate resilience and sustainable environmental management.

6.5.3 PROGRAM OBJECTIVES:

- Provide knowledge of climate science, hydrology, and environmental systems in the context of global and regional change.
- Equip students with computational, statistical, and informatics tools for analyzing large-scale climate and environmental data.
- Develop expertise in modeling climate impacts on water, agriculture, ecosystems, and human settlements.
- Integrate policy analysis and governance perspectives into climate and environmental decision-making.
- Promote innovative solutions, including nature-based and technology-driven approaches, for climate adaptation and mitigation.
- To build capacity for evidence-based decision support in government, the private sector, and international organizations, and to conduct interdisciplinary research to generate actionable knowledge for sustainable development.

6.5.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor & Director: Dr. Kamran Ansari PhD, (UK)	Dr. Sajid Hussain Mangi PhD, (Italy)

Program Coordinator: Dr. Ghulam Hussain Dars PhD, (MUET, Jamshoro)	Dr. Syed M. Zafi Shehran Shah PhD, (UK)

6.5.5 LABORATORY FACILITIES:

The US-Pakistan Center for Advanced Studies in Water is equipped with the required facilities, tools and equipment to conduct experiments. The following laboratories are available at the USPCAS-W, MUET, Jamshoro:

1. Advanced Water & Wastewater Quality Control Lab	5. GIS & Remote Sensing Lab
2. Pilot Scale Water & Wastewater Treatment Lab	6. Computer and Software Lab
3. Soil and Water Analysis Lab	7. Microbiology Lab
4. Hydraulics Lab	

6.5.6 COURSES OFFERS:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Geographic Information System and Remote Sensing	2+1	100
2.	Professional Development and Practices	3	100
3.	Environmental Sciences and Climate Change	3	100
4.	Programming for Environmental Data	2+1	100
Second Semester			
1.	Environmental Ecology and Biodiversity Informatics	3	100
2.	Machine Learning and Artificial Intelligence in Climate Informatics	3	100
3.	IoT-based Techniques in Environmental Monitoring	3	100
4.	Environmental Data Science and Big Data Analysis	2+1	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3	100	Thesis	6	0
2.	Elective-II	3	100			
Fourth Semester						
1.	Elective-III	3	100	Thesis	6	0
2.	Elective-IV	3	100			

- **Elective Courses:**
  - Informatics and Nature-Based Systems
  - Agro-Informatics and Food Security
  - Carbon Cycle Modeling and Carbon Accounting Systems

- Ecosystem Modeling and Environmental Forecasting
- Environmental Physics and Chemistry
- Numerical Methods for Environmental and Water Resources Engineering
- Statistical and Stochastic Methods in Climate and Environmental Sciences
- Environmental Policy, Governance and Climate Negotiations
- Risk Assessment and Disaster Management
- Energy Systems and Renewable Technologies
- Health and Climate Change Informatics
- Green Economy and Climate Finance
- Climate Ethics and Justice
- Water-Energy-Food (WEF) Nexus Informatics

6.5.7 CAREER OPPORTUNITIES:

Employment prospects exist across a wide range of sectors, including government and semi-government departments such as the Pakistan Meteorological Department (PMD), Sindh Environmental Protection Agency (EPA), Sindh Irrigation Department, Public Health Engineering Department (PHED), Planning and Development Department, Sindh Disaster Management Authority, SUPARCO, WAPDA, and other organizations involved in climate, water, environmental management, and disaster risk reduction. Graduates can also find opportunities in private-sector industries and corporations where climate risk, environmental monitoring, sustainability, geospatial technologies, and environmental data management are increasingly important. Consultancy firms, engineering and GIS companies, environmental technology firms, Earth observation and remote sensing organizations, and data analytics companies offer career opportunities in climate-risk assessment, GIS and remote sensing, environmental modelling, climate data analysis, and decision-support systems.

In addition, International and non-governmental organizations such as UNDP, UNEP, FAO, World Bank, Asian Development Bank, USAID, ICIMOD, and WWF provide further career pathways in climate adaptation, resilience, environmental sustainability, water security, disaster risk management, and sustainable development. Graduates can also pursue careers in climate-smart agriculture, flood and drought risk assessment, early-warning systems, water accounting, carbon and sustainability management, and climate-risk analytics. Additionally, many graduates may pursue academic and research careers in universities, research centers, and think tanks, contributing to climate science, environmental informatics, artificial intelligence, Earth observation, modelling, innovation, and evidence-based climate and environmental policymaking.

(B). DOCTORAL DEGREE PROGRAMS:



6.6 ENVIRONMENTAL ENGINEERING (PH.D)

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modeling & Simulation	(3+0)	100
2.	Research methodology	(3+0)	100
3.	Advanced Water and Wastewater Treatment Design	(3+0)	100
4.	Emerging Environmental Laboratory Methods	(3+0)	100
5.	Treatment Processes for Water Reuse	(3+0)	100
6.	Environmental Engineering Entrepreneurship	(3+0)	100
7.	Design of Natural Treatment Systems	(3+0)	100



6.7 INTEGRATED WATER RESOURCES MANAGEMENT (PH.D)

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modeling & Simulation	(3+0)	100
2.	Research Methodology	(3+0)	100
3.	Advanced GIS Applications and Remote Sensing	(3+0)	100
4.	Water Resources Management for Sustainable Development	(3+0)	100
5.	Water Governance	(3+0)	100
6.	Water Resources Systems Analysis	(3+0)	100
7.	Advanced Model Applications in IWRM	(3+0)	100




6.8 HYDRAULICS, IRRIGATION & DRAINAGE (PH.D)

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modeling & Simulation	(3+0)	100
2.	Research methodology	(3+0)	100
3.	Advanced GIS 9=-#]	(3+0)	100
4.	Innovations in Agriculture Water Management	(3+0)	100
5.	Waterlogging and Salinity Control in Irrigated Environment	(3+0)	100
6.	Water Resources System Analysis	(3+0)	100
7.	Water Control and Measurement	(3+0)	100
8.	Advanced Watershed Modelling	(3+0)	100
9.	Advanced Model Application in IWRM/HID	(3+0)	100

7. MEHRAN UNIVERSITY INSTITUTE OF SCIENCE, TECHNOLOGY & DEVELOPMENT (MUiSTD)



The MU Institute of Science, Technology & Development currently offers following Master's and PhD Degree Programs in:	
1. Business Administration (MBA)	1. Management Sciences (PhD)
2. Human Resource Management (MS)	2. Science, Technology & Innovation Policy (PhD)

(A). MASTER DEGREE PROGRAMS:

7.1 BUSINESS ADMINISTRATION (MBA)

7.1.1 INTRODUCTION:

This program is primarily aimed at students who wish to pursue their careers in the corporate sector. The MBA program will help students in enriching their knowledge and skills required for their business career. The program aims to provide students with knowledge of theoretical concepts, analytical tools and decision-making strategies from successful case studies around the world.

The program focuses on the interactions of scientific developments and their utilities in the form of products, processes and services. The program will help in learning from case studies of successful businesses including SMEs and in designing tools, techniques and solutions fit for the local contexts.

MBA with Electives in Finance, Marketing, Human Resource Management, Operations Management, Innovation and Entrepreneurship, Banking and Finance Programs are offered to students with business and non-business-oriented backgrounds.

7.1.2 PROGRAM MISSION:

To provide facility for postgraduate education in the field of Business Management as one of the essential fields to develop wholesome form of expertise required to promote economic development of the country through use of Science, Technology, Innovation and Entrepreneurship tools under the concept of "Conceive, Create and Commercialize" of MUISTD.

7.1.3 PROGRAM OBJECTIVES:

The objectives of the Master in Business Administration degree program are:

i). To conduct multidisciplinary teaching and research leading to MS, MBA, M.Phil. and PhD degrees and to conduct short term training programs and refresher courses in the field of science and technology policy and management to produce the required qualified manpower.

ii). Understanding the problems of efficient management and evaluation of this education, R&D and other activities at the level of universities, R&D organizations, the industry and government and their linkages; and identifying necessary changes in the strategies and policies.

iii). Inquiring into the consequences and implications of changes for economic, social, political, environmental, etc. public policies and management.

7.1.4 ACADEMIC STAFF:

The following is the list of academic staff assigned to the program:

Professor & Director: Dr. Asif Ali Shah PhD, (MUET, Pakistan)	Dr. Saba Qureshi PhD, (Sindh University)
Professor: Dr. Arabella Bhutto PhD, (UK) – **On Lien**	Dr. Ghazala Tunio PhD, (UoS, Pakistan)
Associate Professor: Dr. Qazi Mohammad Moinuddin Abro PhD, (UK) – **On Lien**	Dr. Waqar Ahmed Sethar PhD, (MUET, Pakistan)
Dr. Iffat Batool Naqvi PhD, (Austria)	Dr. Mahvish K. Khaskhelli PhD, (SZABIST, Pakistan)
Dr. Kamleshwer Lohana PhD, (UoS, Pakistan)	Dr. S. M. Kamran PhD, (China)
Dr. Adnan Pitafi PhD, (China)	**Lecturer:** Dr. Tooba Hashmi MBA, (BU, Pakistan)
Assistant Professor: Dr. Wahid Bux Mangrio PhD, (Japan)	**Research Assistant:** Muhammad Usman MBA, (MUET, Pakistan)
Dr. Arifa Bano Talpur PhD, (UoS, Pakistan) - **On leave**	

7.1.5 LABORATORY FACILITIES:

The Mehran University Institute of Science, Technology and Development is equipped with the required facilities, tools and equipment to conduct experiments in field of Management Sciences and Policy Studies. The following laboratories are available at the Mehran University Institute of Science, Technology and Development, MUET, Jamshoro:

1. Computer Lab	2. Computer Lab – II

7.1.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Managerial Economics	(3+0)	100
2.	Organizational Behavior and Leadership	(3+0)	100
3.	Advanced Research Methods	(3+0)	100
4.	Cost and Management Accounting	(3+0)	100
Second Semester			
1.	Problem Solving and Decision Making	(3+0)	100
2.	Strategic Management	(3+0)	100
3.	Portfolio and Risk Management	(3+0)	100
4.	Strategic Marketing Management	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**(Course Work) Subjects**	**Credit Hours**	**Marks**	**(Project/Thesis) Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective- I	3+0	100	Thesis	6+0	200
2.	Elective-II	3+0	100			
Fourth Semester						
1.	Elective-III	3+0	100	Thesis	6+0	200
2.	Elective-IV	3+0	100			

- **THE FOLLOWING IS A LIST OF ELECTIVE COURSES:**

  - **Elective Courses in <u>Finance</u>**

Sr. No.	Subjects	Credit Hours	Marks
1.	International Financial Management	3 – 0	100
2.	Islamic Banking and Finance	3 – 0	100
3.	Banking Regulations and Policies	3 – 0	100
4.	Micro Finance and Credit	3 – 0	100
5.	Corporate Governance and Finance	3 – 0	100
6.	Analysis of Financial Statement	3 – 0	100

  - **Elective Courses in <u>Marketing</u>**

Sr. No.	Subjects	Credit Hours	Marks
1.	Value Chain Marketing	3 – 0	100
2.	E- Marketing	3 – 0	100
3.	Brand Management	3 – 0	100

4.	Sales and Retail Marketing	3 – 0	100
5.	Global Competitive Strategy	3 – 0	100
6.	Consumer Relationship Management	3 – 0	100
7.	Consumer Behavior	3 – 0	100

- **Elective Courses in <u>Human Resource Management</u>**

Sr. No.	Subjects	Credit Hours	Marks
1.	Strategic Human Resource Management	3 – 0	100
2.	Performance Management	3 – 0	100
3.	Compensation and Reward Management	3 – 0	100
4.	Managing Diversity in Organization	3 – 0	100
5.	Employee Training and Development	3 – 0	100
6.	Employee Relations and Labor Laws	3 – 0	100
7.	Conflict Management	3 – 0	100
8.	Business Ethics and Corporate Social Responsibility	3 – 0	100

- **Elective Courses in <u>Operations Management</u>**

Sr. No.	Subjects	Credit Hours	Marks
1.	Project Management	3 – 0	100
2.	Operation Strategy	3 – 0	100
3.	Supply Chain Management	3 – 0	100
4.	Inventory Management	3 – 0	100
5.	Logistics and Distribution	3 – 0	100
6.	Risk and Decision Analysis	3 – 0	100
7.	Service Operation Management	3 – 0	100
8.	Enterprise Resource Planning	3 – 0	100

- **Elective Courses in <u>Innovation and Entrepreneurship</u>**

Sr. No.	Subjects	Credit Hours	Marks
1.	Entrepreneurship	3-0	100
2.	Managing Innovation (MI)	3-0	100
3.	Small Business Management	3-0	100
4.	Entrepreneurial Finance	3-0	100
5.	Innovation and Creativity in Business	3-0	100
6.	Business Model and Intellectual Property	3-0	100
7.	Family Business Management	3-0	100
8.	Product Design and Development	3-0	100

7.2 HUMAN RESOURCE MANAGEMENT (MS)

7.2.1 INTRODUCTION:

This program is primarily aimed at students who wish to pursue careers in academic and industrial environment areas related to Human resource development and management. The program shall aim to provide students with comprehensive and coherent approaches of the employment and development of human resources. The program shall aim to provide students with knowledge to understand the HRM philosophy about how people should be managed through number of theories relating to the behavior of people and organizations. This program course covers the broad areas and concerns of the practice of HRM, covering its conceptual basis, the strategic framework with which HRM activities take place and various factors that affect it. The purpose of this program is to outline a basic set of concepts and to provide analytical tools that enable HR specialists to diagnose organizational behavior and to take appropriate actions.

In today's competitive global economy, focus of businesses is more towards project management for delivering competitive results. This program is aimed at students who wish to pursue careers in corporate sector and SMEs from diversified sectors. The program shall aim to provide students with knowledge and expertise of initialing, planning, executing, monitoring/controlling and closing out projects. The programs offer skills of accomplishing goals through proven frameworks. The program offers disciplined approach starting from portfolio level where the strategic vision drives initial investments and where value measures are established to the fully aligned project, program and portfolio management strategy which encompasses the entire organization, dictating project execution at every level and aiming to deliver value at each step along the way. It is envisaged that businesses need to adapt the project management practices which are in fact, shorthand for project, program and portfolio management as these businesses are clearly seeing the payoff from investing time, money and resources to build organizational project management expertise: lower costs, greater efficiencies, improved customer and stakeholder satisfaction, and greater competitive advantage. This MS program shall help students learn about all these project management practices.

7.2.2 PROGRAM MISSION:

The program is designed to equip the post graduate students with the knowledge of human resource theories, frameworks, best practices, techniques and tools along with innovation, entrepreneurship, leadership and strategic human resource management skills. The MS student enrolled under this program will become able to meet the challenges faced by universities, R&D organizations, government, businesses and individuals in terms of managing human capital through strategies and research. The knowledge of career development, trainings and organization developments, gathered through attending classes and conducting research, will be capitalized to effectively meet the employees and business needs of distinct organizations.

7.2.3 PROGRAM OBJECTIVES:

The objectives of the Master in Business Administration degree program are:

i). To conduct multidisciplinary teaching and research leading to MS, MBA, M.Phil. and PhD degrees and to conduct short term training programs and refresher courses in the field of science and technology policy and management to produce the required qualified manpower.

ii). Understanding the problems of efficient management and evaluation of this education, R&D and other activities at the level of universities, R&D organizations, the industry and government and their linkages; and identifying necessary changes in the strategies and policies.

iii). Inquiring into the consequences and implications of changes for economic, social, political, environmental, etc. public policies and management.

7.2.4 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	HRM Strategy and Practice	(3+0)	100
2.	Organizational Behaviour & Leadership	(3+0)	100
3.	Advanced Research Methods	(3+0)	100
4.	Compensation and Reward Management	(3+0)	100
Second Semester			
1.	Human Capital Management	(3+0)	100
2.	Performance Management Systems and HR Analytics	(3+0)	100
3.	Change Management	(3+0)	100
4.	Industrial and Organizational Psychology	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				STREAM-II (MASTER'S BY RESEARCH)		
Sr. No.	**(Course Work) Subjects**	**Credit Hours**	**Marks**	**(Project/Thesis) Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis	6+0	200
2.	Elective-II	3+0	100			
Fourth Semester						
1.	Elective-III	3+0	100	Thesis	6+0	200
2.	Elective-IV	3+0	100			

- **The following is a list of elective courses:**

Sr. No.	Subjects	Credit Hours	Marks
1.	Strategic Human Resource Management	3 – 0	100
2.	Performance Management	3 – 0	100
3.	Compensation and Reward Management	3 – 0	100
4.	Managing Diversity in Organization	3 – 0	100
5.	Employee Training and Development	3 – 0	100
6.	Employee Relations and Labor Laws	3 – 0	100
7.	Conflict Management	3 – 0	100
8.	Business Ethics and Corporate Social Responsibility	3 – 0	100

(B). DOCTORAL DEGREE PROGRAMS:

7.3 MANAGEMENT SCIENCES (PH.D)

7.3.1 INTRODUCTION:

In the rapidly evolving global landscape, where economic progress is intricately linked with advancements in science, technology, and innovation, the need for specialized expertise in business management has become more critical than ever. **MUISTD** is committed to addressing this vital need by providing world-class postgraduate education in business management.

Rooted in the philosophy of "Conceive, Create, and Commercialize," MUISTD's mission is to cultivate a holistic form of expertise that integrates the principles of entrepreneurship, innovation, and technology-driven solutions to foster sustainable economic growth. By bridging theoretical knowledge with practical applications, MUISTD aims to equip professionals with the tools necessary to address complex challenges, drive economic transformation, and contribute meaningfully to the development of the nation.

This mission underscores MUISTD's unwavering dedication to nurturing leaders who will harness the power of science, technology, and entrepreneurship to create a thriving future for all.

7.3.2 PROGRAM MISSION:

To provide facility for postgraduate education in the field of Business Management as one of the essential fields to develop wholesome form of expertise required to promote economic development of the country through the use of Science, Technology, Innovation and Entrepreneurship tools under the concept of "Conceive, create and commercialize" of MUISTD.

7.3.3 PROGRAM OBJECTIVES:

The objectives of the PhD Management Sciences degree program are:

i). with an ability to examine the role and management of research and development within national systems; and examine the nature of corporate and university research with concerns such as international collaboration, university-industry links, priority setting, etc.

ii). with an experience of design and development of practical innovative projects and their management

iii). with an expertise to manage financial and non-financial issues associated with businesses.

7.3.4 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Epistemology and Philosophy in Management Sciences (EPM)	(3+0)	100
2.	Advanced Research Methods – I (ARM-I)	(3+0)	100
3.	Elective I*	(3+0)	100
Second Semester			
1.	Advanced Research Methods – II (ARM-II)	(3+0)	100
2.	Advanced Microeconomics (AM)	(3+0)	100
3.	Elective II*	(3+0)	100

7.4 SCIENCE, TECHNOLOGY & INNOVATION POLICY (PH.D)

7.4.1 INTRODUCTION:

This program is primarily aimed at students who wish to pursue careers in areas related to policies for Science, Technology and Innovation (ST&I) in both public and private sectors. The program shall aim to provide students with knowledge of analytical tools to understand, analyze and criticize science, technology and innovation policies and to contribute to policy formulation.

The program focuses on the interactions among science, technology, government and society, enabling an understanding of the causes and consequences of technological change in society, and the role of public policy. As science and technology are important driving forces in economic, social and political change and vital factors influencing developments in policy. Scientific and technological innovations are neither socially neutral nor independent of human actions. The ways in which science, technology and innovation develop and are applied depend upon the decisions and actions of organizations and the individuals within them.

Despite the enormous differences between the industrial histories of countries, their experiences of science, technology and innovation policy are often similar. Although the responses vary from country to country, governments and firms in all parts of the world need to develop and implement policies for the promotion, diffusion and control of science & technology. This MS program shall help students learn how to study, analyze and participate in these policy activities in a systematic fashion.

7.4.2 PROGRAM MISSION:

To provide facility for doctoral studies in the field of Science, Technology and Innovation Policy (STIP) as one of the essential fields to develop wholesome form of expertise required to promote socio-economic and techno-economic development of the country through development of required researchers who can develop, assess and critically analyze the national and international STI policies.

7.4.3 PROGRAM OBJECTIVES:

Mehran University PhD STIP program is dealing with a research endeavor in the area of science, technology and innovation. The main objective of this program is to answer how societal, economic and state factors interact to shape the production of scientific knowledge and new technologies. The program deals research pertain to the generation, diffusion and use of innovations for a development of sociotechnical systems. Upon completion of the doctoral studies, students can:

i). Develop, manage and measure the STI policies.
ii). Do an assessment and governance of emerging technologies.
iii). Critically analyze the responsibility in research and innovation.
iv). Devise mechanisms for knowledge production, innovation, technology deployment, and user engagement.
v). Assess the roles of universities, public research centers, and other organizations in science and innovation.
vi). Bring in evaluation, foresight and strategic intelligence in science, technology and innovation policy.

7.4.4 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Strategy for Science, Technology & Innovation Policy (SSTIP)	(3+0)	100
2.	Research Methods in Social Sciences (RMSS)	(3+0)	100
3.	Epistemology and Philosophy of Research (EPR)	(3+0)	100
Second Semester			
1.	National Policies: Design and Evaluation (NPDE)	(3+0)	100
2.	Statistical methods for researchers (SMR)	(3+0)	100
3.	Elective*	(3+0)	100

7.4.5 RESEARCH AREAS:

- Policies, investment and growth of higher education in Pakistan.
- Problems and prospects of an effective University-Industry liaison.
- Problems and prospects of higher education in private sector.
- Growth patterns and future prospects of education at different levels in Pakistan.
- Effective utilization of highly qualified manpower and its contribution to economic
- development in Pakistan.
- Dynamics of Agriculture sector for last 50 years and its future prospects.
- Major problems and prospects of improvement in effectiveness of Indus irrigation system.
- The future development and requirement of Water resources in Pakistan.
- Agriculture and Industrial Development policies patterns and prospects of Sindh.
- Investment, management and utilization of R&D in agriculture.
- Problems and prospects of sugarcane industry in Sindh, other regions viz-viz Pakistan.
- Management of water resources in different regions of Pakistan.
- The prospects an problems of RBOD and LBOD, in context of Sindh.
- Dynamics of Industrial sector for last 50 years and its future prospects.
- Quality and productivity of Labor in Pakistan.
- The influence of real state and capital market on industrialization.
- Influence of privatization of industry on economic growth.
- Promotion and prospects of industry in public sector.
- Growth of Engineering Sector and its contribution to export development in Pakistan in comparison to Malaysia, China, South Korea.
- Impact of privatization on Pakistan economy.
- The trend in manufacturing industry in Pakistan.
- Development of Textile industry and export market.
- Level of profitability in industry to investigate the side factor for investments on long term basis
- The Information Technology initiatives in Pakistan and their success.
- Comparative study of science and technology policies of Pakistan and fast developing
- countries of South East Asia.
- Scientific and Technological development in Pakistan and its contributions to socio economic development.
- Information Technology policies of SAARC countries – Comparative study.
- Science and Technology policies SAARC countries – Comparative study.
- Information Technology policies of OECD countries.
- Science and Technology policies of OECD countries.

- Rural-Urban patterns of socio-economic development in Sindh and other regions of Pakistan.
- Growth patterns and future prospects of construction industry in Pakistan.
- Trade Balance of Pakistan and its future trends.
- What is wrong or right with industrial growth in Pakistan.
- Growth of service industry and its future prospects in Pakistan and its contribution to economic development.
- Comparative study of economic contribution of different industries in Pakistan, viz Textile, Manufacturing, Chemical Services.
- Innovation in service industry in Pakistan.
- The role of PIDC in industrial development of Pakistan.
- Poverty alleviation problems and prospects in Sindh and other regions of Pakistan.
- Use of technologies in farming in Pakistan and its influence as growth patterns in Agriculture.
- Role and responsibilities of Government in ICT policy.
- Influence of multinationals on growth of local industry.
- Comparison of Western and Chinese patterns of scientific & technological and economic development.
- Failure and success patterns of Five-year development plans of Pakistan.
- Factors influencing the economic growth rate and per capita income of Pakistan.
- Economic growth rate and per capita income patterns of different regions of Pakistan.
- Comparative study of scientific and technological development in developed and developing countries.
- Effectiveness of the present scientific and technological policies on socioeconomic development.
- Influence of rapid scientific and technological development in advanced countries on the scientific and technological development of developing countries.
- Effective pattern of scientific and technological development for developing countries under the unchanging influence of rapid scientific and technological development in advanced countries.
- Growth balance of the factors contributing to scientific and technological development for rapid economic development in Pakistan.
- Development of oil and gas resources and its requirements for next 20 years in Pakistan.
- The contribution of industry and other factors to greenhouse effect in Pakistan.
- Policies, investment and growth of scientific and technological R&D in institutions of higher education and their effective utilization.
- Policies, investment and growth of scientific and technological R&D in R&D organizations and their effective utilization.
- Policies, investment and growth of scientific and technological R&D in industry and its effective utilization.
- Management of scientific and technological development at national level and its coordination at grass root level.
- Climatic change, factors influencing it and its control in Pakistan.
- Environmental impact assessment (EIA) of development projects, mega projects in Pakistan.
- Development of renewable/alternative energy resources in Pakistan.
- Role of renewable/alternative energy resources in energy efficiency.
- Environmental problems associated with fossil fuel energy and possible solutions.
- Viability and development of wind/solar as alternative energy resources.
- Energy supply and consumption patterns in Pakistan and their economic and social impacts.
- Energy demand and supply patterns for next 25 years.

8. INSTITUTE OF ENVIRONMENTAL ENGINEERING & MANAGEMENT



The Institute Environmental Engineering and Management currently offers following Master's and PhD Degree Programs in:	
1. Energy & Environmental Engineering (ME)	1. Environmental Engineering (PhD)

(A) MASTER DEGREE PROGRAMS:

7.1 ENERGY & ENVIRONMENTAL ENGINEERING (ME)

7.1.1 INTRODUCTION:

With increased awareness about energy and environmental issues at the global and national levels, the discipline of energy and environmental engineering has become an emerging discipline with vast scope for progress in the future. The Institute of Environmental Engineering and Management (IEEM) was established with the aim of creating new knowledge and finding innovative solutions to local and global environmental issues but later on it was realized that there is a lot of hue and cry for energy crisis as well as pollution control. Today, Pakistan stands on the threshold of implementing environmental standards, and development of non-conventional energy resources for clean and cheap energy. The institute is offering the postgraduate program leading to master degree in the discipline of energy and environmental engineering. This program highlights comprehensive study of Environmental Impact Assessment of development projects, Health and Safety practices and green and renewable energy technologies in order to reach higher education and research in the field of Sustainable energy and environmental engineering.

7.1.2 PROGRAM MISSION:

This program imparts high-quality education with the vision of developing professionals to provide innovative solutions to the engineering challenges of future and nurture personal growth skills as creative and entrepreneurial minds along with professional ethics to begin their career as successful engineers, researchers, consultants, regulators, and managers.

7.1.3 PROGRAM OBJECTIVES:

The objectives of the ME in Energy and Environmental Engineering degree program are:

i). To enable the graduates to apply engineering knowledge effectively and efficiently.
ii). To provide an advanced understanding of engineering management practices to successfully formulate an innovative research plan in development related technologies.
iii). To establish linkage between academia and industry through research and development.
iv). To prepare graduates to work within ethical values to serve the community.

7.1.5 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Program Coordinator: Prof. Dr. Abdul Razaque Sahito PhD, (MUET, Pakistan)	Engr. Maryam Arain M.E, (MUET, Pakistan)
Professor: Prof. Dr. Sheeraz Ahmed Memon PhD, (South Korea)	Dr. Sajid Hussain Mangi PhD, (Italy)
Prof. Dr. Abdul Razaque Sahito PhD, (MUET, Pakistan)	**Lecturer:** Engr. Abdul Aziz Chan M.E, (MUET, Pakistan
Associate Professor: Dr. Muhammad Safar Korai PhD, (MUET, Pakistan)	Engr. Sanjay Kumar M.E (MUET, Pakistan)
Assistant Professor: Dr. Azizullah Channa PhD, (China)	

7.1.6 LABORATORY FACILITIES:

The Institute of Environmental Engineering and Management is equipped with the required facilities, tools and equipment to conduct experiments in field of Environmental Engineering. The following laboratories are available at the Institute of Environmental Engineering and Management, MUET, Jamshoro:

1. GIS & Computer Laboratory Equipment	5. Air & Noise Pollution Control Lab.
2. Water & Soil Pollution Control Lab.	6. Hi-Tech Laboratory
3. Microbiology Laboratory	7. Thermo Laboratory
4. Solid Waste Management Laboratory	8.

7.1.7 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Energy and Environment	(2+0)	50
2.	Advanced Air and Noise Pollution Control	(3+0)	100
3.	Physicochemical Processes in Environmental Engineering	(3+0)	100
4.	Fossil Fuels and Power Plants	(3+0)	100
5.	Energy and Environmental Engineering Lab-01	(0+1)	50
Second Semester			
1.	Design of water and wastewater treatment plants	(3+0)	100

2.	Renewable Energy Resources Engineering	(3+0)	100
3.	Solid and Hazardous Waste Management	(3+0)	100
4.	Professional Development and Practices	(2+0)	50
5.	Energy and Environmental Engineering Lab-02	(0+1)	50

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective-I	3+0	100	Thesis	6	0
2.	Elective-II	3+0	100			
Fourth Semester						
3.	Elective-III	3+0	100	Thesis	6	0
4.	Elective-IV	3+0	100			

List of Elective Subjects for Masters in Energy and Environmental Engineering by Coursework:

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
1.	EIA and Climate Change	3+0	100
2.	Modelling in Energy and Environmental Engineering	3+0	100
3.	Waste to Energy Engineering	3+0	100
4.	Occupational Health and Safety	3+0	100
5.	Water demand management	3+0	100
6.	Green Engineering Technologies	3+0	100
7.	Climate change mitigation and adaptation	3+0	100
8.	Solar energy systems	3+0	100

7.1.8 CAREER OPPORTUNITIES:

Environmental Engineering programs offer opportunities to work in different aspects of environmental protection. The major areas include:

- Water Supply and Wastewater Engineering and Treatment
- Air Pollution Control and Management
- Solid Waste Engineering and Management
- Hazardous Waste Management
- Health, Safety and Environment (HSE)
- Environmental Impact Assessment (EIA)
- Green Engineering
- Natural resource management
- Public Health and Land Pollution Control
- Climate Change & Disaster Management

(B). DOCTORAL DEGREE PROGRAMS:

7.2 ENVIRONMENTAL ENGINEERING (PH.D)

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Mathematical Modeling & Simulation	(3+0)	100
2.	Research methodology	(3+0)	100
3.	Biomass energy technology	(3+0)	100
4.	Life cycle assessment	(3+0)	100
5.	Advances in biogas technology	(3+0)	100
6.	Advanced wastewater treatment	(3+0)	100
7.	Advancement in biofuels	(3+0)	100
8.	Water Demand Management	(3+0)	100
9.	Water quality management & control	(3+0)	100
10.	Coastal and Marine Pollution	(3+0)	100
11.	Integrated solid waste management	(3+0)	100
12.	Green engineering technologies	(3+0)	100
13.	Advanced RS & GIS application in environment	(3+0)	100
14.	Agricultural pollution control engineering	(3+0)	100
15.	Integrated watershed management	(3+0)	100
16.	Atmospheric pollution control and dispersion modeling	(3+0)	100
17.	Water logging and Salinity	(3+0)	100
18.	Solar Energy System	(3+0)	100
19.	Climate Change Mitigation and Adaptation	(3+0)	100

8. INSTITUTE OF PETROLEUM & NATURAL GAS ENGINEERING

The Institute of Petroleum & Natural Gas Engineering currently offers following Master's and PhD Programs:	
1. Petroleum Engineering (ME)	2. Petroleum Engineering (PhD)

(A). MASTER'S DEGREE PROGRAM:



8.1 PETROLEUM ENGINEERING (ME)

8.1.1 INTRODUCTION:

The Institute of Petroleum & Natural Gas Engineering was established in 1996 in order to encourage postgraduate studies and research. The graduate program in Petroleum Engineering is to prepare researchers to be leaders in industry, government, or academia. The field of engineering is continuously evolving and alumni with the advanced education and research skills associated with obtaining graduate degrees have the flexibility, breadth, and depth to become leaders as the problems of tomorrow arise. The aim of the Institute is to develop capabilities to work independently as well as groups and teams and establish strong collaboration with Petroleum Industry.

The Institute of Petroleum & Natural Gas Engineering offers both Master's Degree in Petroleum Engineering by Course and Research. The ME program requires 36 credits. The master's program in Petroleum Engineering is an interdisciplinary field that applies engineering principles to the development of commercial oil and gas fields. The postgraduate program provides advanced knowledge in the areas of Reservoir engineering, Petroleum production engineering, and Drilling engineering. The Masters in Petroleum Engineering program focuses on applying recent advances in Petroleum reservoir engineering, Oil & gas production technologies, advanced well logging & interpretation, Petro physics, Geo-mechanics, and Project Research.

8.1.2 PROGRAM MISSION:

The postgraduate program in Petroleum Engineering aims to provide quality education to produce skilled, dynamic, creative and ethical professionals to uplift the development of the society and petroleum industry.

8.1.3 PROGRAM OBJECTIVES:

The objectives of the ME/PhD in Petroleum Engineering degree program are:

i). To provide strong foundation for graduates and postgraduate studies and research.
ii). Enable the researchers to demonstrate communication skills and high standard of Professional ethics throughout their career.
iii). To engage advance teaching and research leading to **ME** and **PhD** degrees and to prepare highly qualified, specialized manpower in the field of **Petroleum Engineering** who can later-on offer the professional services and skills to the oil and gas industries.

8.1.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor And Director: Dr. Muhammad Khan Memon PhD, (UTP, Malaysia)	Engr. Abdul Qadir Shaikh ME, (MUET, Pakistan)
Meritorious Professor: Dr. Abdul Haque Tunio PhD, (MUET, Pakistan)	Dr. Imran Ahmed Hulio PhD, (MUET, Pakistan)
Associate Professor: Dr. Aftab Ahmed Mahesar PhD, (MUET, Pakistan)	Dr. Irshad Ali Gopang ME, (MUET, Pakistan)
Dr. Khalil Rehman Memon PhD, (MUET, Pakistan)	Engr. Faisal Najam Abro ME, (MUET, Pakistan)
Assistant Professor: Engr. Naveed Ahmed Ghirano ME, (MUET, Pakistan)	**Lecturer:** Engr. Muhammad Ali Memon ME, (MUET, Pakistan)

8.1.5 LABORATORY FACILITIES:

The Institute of Petroleum & Natural Gas Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Petroleum Engineering. The following laboratories are available at the Institute of Petroleum & Natural Gas Engineering, MUET, Jamshoro:

1. PVT Lab
2. Drilling Fluids Lab.
3. Petroleum Refinery Lab.
4. Drilling & Production Lab
5. Oil Testing & Gas Engineering Lab
6. Simulation Lab
7. Computer Lab

8.1.6 COURSES OFFERED:

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Pressure Transient Testing	(3+0)	100
2.	Advanced Reservoir Engineering	(3+0)	100
3.	Advanced Drilling Engineering	(3+0)	100

4.	Research Methods & Design	(3+0)	100
Second Semester			
1.	Enhanced Oil Recovery	(3+0)	100
2.	Well Performance	(3+0)	100
3.	Advanced Well Logging & Interpretation	(3+0)	100
4.	Petroleum Reservoir Simulation	(3+0)	100

STREAM-I (MASTER'S BY COURSE)				**STREAM-II (MASTER'S BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
1.	Elective course	2+0	50	Thesis	6	0
2.	Elective course	2+0	50			
3.	Elective course	2+0	50			
Fourth Semester						
1.	Elective course	2+0	50	Thesis	6	0
2.	Elective course	2+0	50			
3.	Elective course	2+0	50			

The following is a list of elective courses:

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
Third Semester			
1.	Computational Reservoir Geomechanics	(2+0)	50
2.	Gas Processing	(2+0)	50
3.	Well Stimulation Design	(2+0)	50
4.	Petrophysics	(2+0)	50
5.	Unconventional Hydrocarbon Resources	(2+0)	50
Fourth Semester			
1.	Fluid Flow in Porous Media	(2+0)	50
2.	Reservoir Engineering Management	(2+0)	50
3.	Artificial Lift Techniques	(2+0)	50
4.	Applied Mathematics in Reservoir Engineering	(2+0)	50
5.	Well Integrity	(2+0)	50

8.1.7 CAREER OPPORTUNITIES:

Once you have completed your Masters in Petroleum Engineering, you will be equipped with skills and knowledge that enable you to solve future tasks and challenges related to the production of oil and gas.

There are great work opportunities within the traditional as well as the future oil industry. Possible work places include OGDCL, PPL, UEP, Mari Energies, Prime oil and Multinational oil/gas companies, consultancy firms and service providers.

A completed master's degree also forms a good basis for a future career as a researcher.

(B). DOCTORAL DEGREE PROGRAM:



8.2 PETROLEUM ENGINEERING (PH.D)

8.2.1 INTRODUCTION:

The Doctor of Philosophy (PhD) in Petroleum Engineering at the Institute of Petroleum & Natural Gas Engineering prepares scholars for advanced research and leadership in the oil and gas organizations. The program focuses on developing strong analytical skills, independent research capability, and industry-oriented problem-solving aligned with the Institute's commitment to high-level postgraduate studies. Doctoral candidates engage in advanced coursework and undertake field research in areas such as reservoir engineering, Production Engineering, Drilling Engineering, Advanced well logging & interpretation, Data Science, Machine Learning and Reservoir Simulation. Collaboration with the petroleum industry strengthens the relevance and practical impact of research outcomes. Graduates are equipped to serve as researchers, innovators, and academic leaders, contributing new knowledge and advanced solutions to meet the evolving challenges of global energy systems.

8.2.2 PROGRAM MISSION:

The mission of the graduate program in Petroleum Engineering is to prepare researchers to be leaders in industry, government, or academia. The field of engineering is continuously evolving and alumni with the advanced education and research skills associated with obtaining graduate degrees have the flexibility, breadth, and depth to become leaders as the problems of tomorrow arise.

All students in the PhD program will learn the research techniques that individuals working in national laboratories, industrial positions and academia.

8.2.3 PROGRAM OBJECTIVES:

The objectives of the PhD in Petroleum Engineering degree program are:

i). Become a recognized expert at a global level in a specific area of petroleum engineering or a related field.

ii). Be able to succeed as a research leader in industry or government agency, or as a faculty member in academia.

8.2.4 ACADEMIC STAFF:

Following is the list of academic staff assigned to the program:

Professor And Director: Dr. Muhammad Khan Memon PhD, (UTP, Malaysia)	Dr. Ubedullah Ansari ME, (MUET, Pakistan)
Meritorious Professor: Dr. Abdul Haque Tunio PhD, (MUET, Pakistan)	**Assistant Professor:** Dr. Irshad Ali Gopang ME, (MUET, Pakistan)
Associate Professor: Dr. Aftab Ahmed Mahesar PhD, (MUET, Pakistan)	Dr. Imran Ahmed Hulio PhD, (MUET, Pakistan)
Dr. Khalil Rehman Memon PhD, (MUET, Pakistan)	

8.2.5 COURSES OFFERED:

All courses are designed with three credit hours (03C.H). Candidate registered in the PhD in Petroleum Engineering will select six subjects (03 subjects in 1st Semester & 03 subjects in 2nd semester) related to his research area.

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	Research Methodology	(3+0)	100
2.	Advancement in Petrophysics	(3+0)	100
3.	Estimation Of Oil & Gas Reserves	(3+0)	100
4.	Oil & Gas Field Development	(3+0)	100
5.	Petroleum Geomechanics	(3+0)	100
6.	Hydraulic Fracturing	(3+0)	100
7.	Tight Gas Reserves	(3+0)	100
8.	Shale Resources	(3+0)	100
9.	Corporate Finance Management in Petroleum Industry	(3+0)	100
10.	Offshore Petroleum Engineering	(3+0)	100
11.	Faults, Fractures and Fluid Flow	(3+0)	100
12.	Natural Gas Hydrates	(3+0)	100
13.	Coal Bed Methane	(3+0)	100
14.	Mathematical Modeling & Simulation	(3+0)	100

8.2.6 RESEARCH AREAS:

Candidates are required to undertake a specific PhD research project on any topic related to the field. The emphasis will be on the following area:

i). Applications of Artificial Intelligence (AI) in Oil & Gas Development
ii). Petroleum Data Science and Machine Learning
iii). Drilling Engineering
iv). Reservoir Engineering
v). Well Stimulation & Testing
vi). Production Optimization
vii). Enhanced/Improved Oil Recovery
viii). Drilling Fluids

10. MUET, SHAHEED ZULFIQAR ALI BHUTTO CAMPUS, KHAIRPUR MIRS'



INTRODUCTION

Postgraduate education and research are a backbone for developing existing social and economic infrastructure with implementation of high technological skills and tools. Accordingly, more and more people are investing time and resources in postgraduate education. Graduate students can gain new skills and competences that will give them the right environment and impetus to re-enter the competitive arena with renewed confidence - provided they choose the right program. Specialized master courses enable students to follow the dynamics of a changing job market more closely and rapidly by responding to the emergence of new professional fields and evolving competencies within traditional professions. Students with some experience add to the diversity in the classroom from their varied professional backgrounds - from different industries and different functional roles.

The recruiting companies also appreciate this factor. Mehran University SZAB campus inspired by the foregoing spirit and motivational objective embarked upon launching its postgraduate program initially for the discipline of Energy Systems Engineering in the year 2013. Encouraged and motivated from the viewpoint of the handsome turnout of the number of postgraduate students, the campus moved forward in launching up more disciplines one after another i.e., Electrical Power engineering, Civil engineering and Petroleum engineering in the years 2014, 2017 and 2022 respectively. State of the art facilities and quality education in these fields have proved that this experiment of new learning concepts by the undergraduate fresh as well as old students have appreciated very widely. Not only that they are equipped with latest technological knowledge but at the same time their career-making urge and thrill to reach them to top and elevated positions with enhanced salaries make them more than willing to accept this exciting and innovative challenge of learning whole heartedly.

Industrial organizations like WAPDA, PTCL, KWSB, MTF, Railways, Construction Industry, Irrigation, Works and Services Departments and Electric Utilities Companies, Petrochemical etc. are named few amongst many which have recognized this emerging trend also to encourage engineers and technologists working in these organizations to keep abreast of latest knowledge and skills by recruiting themselves to postgraduate courses and research to realize the technical advancement to meet with the international standards of techno-socio-economic order.

Prof. Dr. Syed Hyder Abbas Musavi
In-Charge Postgraduate Studies – MUET SZAB Campus, Khairpur Mir's
Tel: 0243-715364-65 (Ext 7016) Email: drhyderabbas@muetkhp.edu.pk

OFFICERS OF THE CAMPUS

1. Prof. Dr. Khanji Harijan Pro-Vice Chancellor, MUET, SZAB Campus, Khairpur Mirs'.
2. Prof. Dr, Syed Hyder Abbas Musavi, Director Academics
3. Dr. Mujeeb Iqbal Soomro, Director Administration
4. Dr. Sajjad Ali Mangi Chairman, Civil Engineering Department
5. Dr. Aqeel Ahmed Bhutto Chairman, Mechanical Engineering Department
6. Dr. Mohsin Ali Tunio In-charge Chairman Electrical Engineering Department
7. Dr. Asadullah Memon Chairman, P & NG Engineering Department
8. Dr. Hadi Bux Chajro Chairman, Basic Sciences & Related Studies
9. Dr. Engr. Shakir Ali Soomro Focal Person (SFAO)
10. Dr. Abdul Qayoom Memo Focal Person Industrial Liaison & ORIC
11. Dr. Noman Qadeer Soomro In-charge Chairman Software Engineering Department
12. Dr. Irfan Ahmed In-charge Chairman, Electronics Engineering Department
13. Mr. Nadeem Ahmed Tunio Focal Person Examination
14. Mr. Shoaib Ahmed Shah In-Charge Finance
15. Mr. Sajjad Ahmed Memon Additional Director Works & Services
16. Mr. Allah Bachayo Memon Deputy Librarian
17. Dr. Mazhar Hussain Baloch Additional Director QEC
18. Mr. Pir Syed Asif Hussain Shah Jilani Deputy Director, Sports

Mehran UET, Shaheed Zulfiquar Ali Bhutto (SZAB) Campus, Khairpur Mirs' currently offers the following Master's Degree Programs:			
1.	Civil Engineering (ME)	3.	Energy Systems Engineering (ME)
2.	Electrical Power Engineering (ME)	4.	Petroleum Engineering (ME)

10.1 CIVIL ENGINEERING (ME)

10.1.1 INTRODUCTION:

The program of ME Civil Engineering at the Mehran UET, Shaheed Zulfiqar Ali Bhutto Campus, Khairpur Mir's provides state-of-the-art, essential, and advanced Civil Engineering education to the aspiring Civil Engineering graduates according to the requirements of field in a dynamic learning environment that emphasizes problem solving skills, team-work, communication skills and leadership qualities. This study also evolves as a research-based solution provider to the construction industry.

10.1.2 THE FACULTY:

Professor: Prof. Dr. Kanya Lal Khatri PhD, (Australia)	Dr. Hemu Karira PhD, (Pakistan)
Dr. Syed Naveed Raza Shah PhD, (Malaysia) - **On Sabbatical Leave**	Engr. Touqeer Ali Rind ME, (Pakistan) - **On study Leave**
Associate Professor and Chairman: Dr. Sajjad Ali Mangi PhD, (Malaysia)	Dr. Abdul Qayoom Memon PhD, Thailand.
Associate Professor & Program Coordinator: Dr. M. Jaffar Memon PhD, China.	**Lecturers:** Engr. Dhanesh Kumar ME, (Malaysia)
Dr. Ghulam Shabir Solangi PhD, (Pakistan)	Engr. Sanghaar Bhutto ME, (Malaysia) On study Leave
Assistant Professors: Dr. Dildar Ali Mangnejo PhD, (Pakistan)	Engr. Naveed Ali Channa ME, (Pakistan) - *On Contract Basis*
Dr. Rabia Soomro PhD, (Pakistan)	**Laboratory Engineers:** Engr. Ghulam Rasool Siddiqui ME, (Pakistan)
Engr. Abdul Razzaque Sandhu ME, (Pakistan)	Engr. Ashfaq Ahmed Jhatial - **On Study Leave**

10.1.3 LABORATORY FACILITIES:

For ME Civil Engineering, MUET, SZAB Campus Khairpur has nine fully functional laboratories equipped with advanced equipment for academics and research purposes. The list of the laboratories is given below:

1.	Concrete Laboratory	6.	Environmental Engineering Laboratory
2.	Fluid Mechanics & Hydraulics	7.	Computer Laboratory
3.	Surveying Laboratory	8.	Software Laboratory
4.	Highway Engineering Laboratory	9.	Engineering Drawing Hall
5.	Soil Mechanics Laboratory		

10.1.4 COURSES OFFERED:

The Courses of M.E Civil Engineering followed at MUET Shaheed Zulfiqar Ali Bhutto campus Khairpur and MUET Jamshoro campus are same. The students are advised to see the page(s) of M.E Civil Engineering Courses mentioned on the relevant section of MUET Jamshoro in this prospectus.

10.1.5 CAREER OPPORTUNITIES:

The knowledge provided in M.E Civil Engineering program, MUET, SZAB Campus enables our students to join the Civil Engineering industry as graduates, educational institutions as instructors, or set up their own businesses. Typical employment sectors for Civil Engineering include public sector departments (Buildings, Highways, Railways, Airports, Irrigation, Water and Power, Ports), consultation companies, contractors, local authorities, and non-profit organizations. Due to the equivalent focus on research and academics from initial level, many of our graduated students have chosen various Universities as an academia or researcher and achieved good fame in their relevant field. The M.E Electrical Power Engineering program at MUET, SZAB Campus provides clear route to a professional career in Civil Engineering.

10.2 ELECTRICAL POWER ENGINEERING (ME)

10.2.1 THE FACULTY:

Associate Professor: Dr. Mazhar Hussain Baloch Post Doc., (USM, Malaysia)	Engr. Shafqat Hussain Memon ME, (MUET, Pakistan) - **On Study Leave**
Dr. Touqeer Ahmed Jumani PhD, (UTM, Malaysia) - **On Lien**	Engr. Rasool Akhtar Alias Osama ME, (MUET, Pakistan) - **On Study Leave**
Assistant Professor and Chairman: Dr. Mohsin Ali Tunio PhD, (UM, Malaysia)	Dr. Zeeshan Anjum Memon PhD, UTM
Assistant Professors: Dr. Shakir Ali Soomro PhD, (MUET, Pakistan)	Dr. Muhsan Ali Mari PhD, (MUET, Pakistan)
Dr. Nadeem Ahmed Tunio PhD, (MUET, Pakistan)	Dr. Basheer Ahmed Kalwar PhD, China
Dr. Irfan Ahmed PhD, (MUET, Pakistan)	Engr. Asif Ali Solangi ME, (MUET, Pakistan)
Program Coordinator: Dr. Ahsanullah Memon PhD, (UTM, Malaysia)	Engr. Musavir Hussain Buriro ME, (MUET, Pakistan)
Lecturers: Dr. Kalsoom Baghat PhD, China	Engr. Zubair Ali Phulpoto ME, (MUET, Pakistan)

10.2.2 COURSES OFFERED:

The Courses of ME Electrical Power Engineering followed at MUET Shaheed Zulfiqar Ali Bhutto campus and MUET Jamshoro campus are same. The students are advised to see the page(s) of ME Electrical Power Engineering Courses mentioned on the relevant section of MUET Jamshoro in this prospectus.

10.2.3 LABORATORIES:

The ME Electrical Power Engineering program is equipped with state-of-the-art labs to cater the practical/experimental requirements to supplement the course work of the ME Electrical Power Engineering Program. Following Laboratories have been established for the program:

1. Power System
2. Instrumentation & Control
3. Basic Electrical Engineering
4. High Voltage Engineering
5. Basic/Applied Electronics Engineering
6. Communication System
7. Electrical Machines
8. Power Electronics
9. Computer Lab
10. Software Lab

10.2.4 CAREER OPPORTUNITIES:

Electrical Engineers have vast career opportunities in wide range of industries and organizations depending on their respective specializations. In Pakistan industries and organizations both

Public and Private sector, such as, Pakistan Atomic Energy Commission, Pakistan International Airlines, Civil Aviation Authority (CAA), Pakistan Steel Mills, PEPCO, NTDC, GENCOs, DISCOs, K-Electric, PTCL, NTC, IPPs, Fertilizer and chemical industries such as OGDCL, SNGPL, Engro, FFC and various other national and international industries and organizations hire Electrical Engineers for design, control, operation and managerial jobs. Electrical Engineers are generally encouraged to attend continual professional development course (CPD) and acquire skills required in the job market to secure attractive and challenging career opportunities. This department also conducts such CPD courses which help in career development of the young engineers.

10.3 ENERGY SYSTEMS ENGINEERING (ME)

10.3.1 INTRODUCTION:

Under the umbrella of the Mechanical Engineering Department (MED) of MUET, SZAB Campus Khairpur Mirs', a Master of Engineering (ME) degree with a major in Energy Systems Engineering is offered.

The department has a policy of assessing its graduate and undergraduate programs regularly to ensure that they are up to date with the newest and emerging developments and trends in mechanical engineering.

10.3.2 THE FACULTY:

Meritorious Professors: Prof. Dr. Khanji Harijan PhD, MUET, Jamshoro	Dr. Ali Nawaz Sanjrani PhD, (China)
Associate Professors: Dr. Sadiq Ali Shah PhD, (UK)	Engr. Majid Ali Wassan M.E., Malaysia - *On Study Leave*
Dr. Mazhar Hussain Baloch Post Doc., (USM, Malaysia) -	Engr. Qadir Nawaz ME, (Pakistan) - *On Study Leave*
Dr. Mujeeb Iqbal Soomro PhD, (South Korea)	Engr. Aurangzaib Wadho ME, (Pakistan)
Assistant Professors: Dr. Mohsin Ali Tunio PhD, (UTM, Malaysia)	Engr. Jahanzaib Soomro M.E. Pakistan.
Assistant Professor and Chairman: Dr. Aqeel Ahmed Bhutto PhD, (Malaysia)	**Lecturers:** Engr. Ali Anwar Brohi ME, (China)
Assistant Professors: Dr. Bilawal Ahmed Bhayo PhD, (Malaysia)	Engr. Abdul Ahad Noohani ME, (Pakistan)
Dr. Danish Ali Memon PhD, (Malaysia)	Engr. Talib Hussain Ghoto ME, (Pakistan)
Program Coordinator: Dr. Zaheer Ahmed Odho PhD, (Turkey)	Engr. Awais Junejo ME, (Pakistan) - *On Study Leave*
Dr. Shakir Ali Soomro PhD, (MUET, Pakistan)	Engr. Muhammad Haris Khan ME, (Pakistan)

10.3.3 COURSES OFFERED:

The Courses of M.E Energy Systems Engineering followed at MUET Shaheed Zulfiqar Ali Bhutto campus and MUET Jamshoro campus are same. The students are advised to see the page(s) of M.E Energy Systems Engineering Courses mentioned on the relevant section of MUET Jamshoro in this prospectus.

10.3.4 LABORATORY FACILITIES:

Following labs are established for this program to cater to the practical/experimental requirements of the program offered:

1. Automobile Laboratory
2. Aerodynamics Laboratory
3. CAD/CAM Laboratory
4. CNC Laboratory
5. Engineering Statics Laboratory
6. Fluid Mechanics Laboratory
7. Heat Transfer Laboratory
8. Heating Ventilation & Air
9. Material Testing Laboratory
10. Mechanics of Machine Laboratory
11. Mechanical Vibrations Laboratory
12. Control Engineering Laboratory
13. Renewable Energy Laboratory
14. Thermodynamics Laboratory
15. Fitting Shop
16. Machine Shop
17. Welding Shop
18. Wood Workshop

10.3.5 CAREER OPPORTUNITIES:

ME in Energy Systems Engineering graduates have a wide range of job prospects due to the discipline's breadth. Their education equips students with the creative thinking needed to develop an innovative product or system, as well as the analytical tools needed to meet their design objectives, the capacity to overcome any restrictions, and the teamwork required to design, sell, and produce a system. Employers in practically every sector of the engineering business are looking for mechanical engineering graduates.

Here are a few examples: With a ME in Energy Systems engineering, you may be able to work in the following fields:

- **Aerospace industry** – Aerospace equipment research, design, manufacture, and maintenance.
- **Automotive industry** – Designs, Manufactures, and Maintenance of Automobiles.
- **Defense industry** – Design Fabrication and Maintenance of Defense Equipment.
- **Electronics industry** – Design and manufacture of components for a variety of industries, including automotive, medicine, and the military.
- **Fast-moving consumer goods industry** – Manufacturing of products such as household cleaning items, personal hygiene goods, and convenience foods.
- **Marine industry** – Design, Fabrication, and Maintenance of Marine Systems.
- **Materials and metals industry** – Material Specimen Testing, Selection of Material, and Evaluation.
- **Power Generation Industry** – Operation, repair, and maintenance of pressure vessel equipment.
- **Rail industry** – From trains and rails to electrical power systems and train control systems, the rail industry designs, manufactures, and maintains rail system components.

10.4 PETROLEUM ENGINEERING (ME)

10.4.1 INTRODUCTION:

In view of the growing importance of the oil and gas sector in Pakistan's economy and its contribution to national energy security, the need for highly qualified petroleum engineers with advanced technical knowledge and research skills is increasing. Sindh is one of the country's major oil and gas producing provinces, with significant hydrocarbon resources and considerable potential for further exploration, reservoir development, and improved hydrocarbon recovery. The province therefore offers strong opportunities for advanced education and research in the Petroleum Engineering field. The Master in Petroleum Engineering program provides graduates and industry professionals with opportunities to enhance their expertise in advanced drilling techniques, reservoir engineering, production optimization, reservoir simulation, and sustainable energy resource management. The program also strengthens industry–academia collaboration, promotes applied research to address local petroleum industry challenges, and develops skilled professionals who can contribute to efficient resource utilization, technological advancement, and Pakistan's long-term energy security and economic development.

10.4.2 THE FACULTY:

Associate Professor & Chairman: Dr. Asadullah Memon PhD, (China)	**Assistant Professor:** Engr. Abdul Samad Shaikh ME, (Pakistan)
Assistant Professors: Engr. Imran Ali Memon ME, (Pakistan)	Engr. Sunder Sham Jeswani ME, (Pakistan)
Dr. Faisal Hussain Memon PhD, (Pakistan)	**Lecturers:** Engr. Shoaib Ahmed Memon ME, (Pakistan)
Dr. Ghulam Abbas Qambrani PhD, (Pakistan)	**Program Coordinator:** Dr. Zaheer Hussain Zardari PhD, (Malaysia)

10.4.3 COURSES OFFERED:

The Courses of ME Petroleum Engineering followed at MUET Shaheed Zulfiqar Ali Bhutto campus and MUET Jamshoro campus are same. The students are advised to see the page(s) of M.E Petroleum Engineering Courses mentioned on the relevant section of MUET Jamshoro in this prospectus.

10.4.4 LABORATORY FACILITIES:

The department is equipped with well-established laboratories to conduct experimental work and measure rock properties, reservoir fluid properties, drilling fluid properties, and interfacial properties. The computer laboratories are equipped with specialized software for reservoir simulation, drilling engineering, and production engineering. The available software includes navigator for reservoir simulation, Exodus V90 and Sendra for reservoir engineering, drilling and workover simulators for drilling engineering, and the IPM and Kappa Suite for production engineering.

The following Laboratories are available at the department:

1. Oil Testing Laboratory
2. Drilling and Production Laboratory
3. Reservoir Engineering Laboratory
4. Gas Engineering Laboratory
5. Petroleum Software Lab
6. General Computer Lab

10.4.5 CAREER OPPORTUNITIES:

Petroleum Engineering offers a wide range of career opportunities in the oil and gas industry, covering exploration, drilling, reservoir engineering, production, and field development. Petroleum engineers play an important role in evaluating oil and gas reservoirs, designing and optimizing drilling and production operations, and maximizing hydrocarbon recovery while ensuring cost-effectiveness, operational safety, and environmental protection.

Graduates of the Department can pursue careers in national and multinational exploration and production (E&P) companies, oilfield service companies, refineries, and related energy industries. They can work in various technical and managerial positions in organizations such as Oil and Gas Development Company Limited (OGDCL), Pakistan Petroleum Limited (PPL), United Energy Pakistan (UEP), SLB (Schlumberger), Weatherford, Polish Oil and Gas Company, and Hilong Oil Service and Engineering. In addition, graduates can explore opportunities in reservoir simulation, drilling and production operations, research and development, consultancy, academia, and emerging areas of the energy sector.

11. SUPPORTING FACILITIES FOR STUDENTS AT CAMPUS

Many facilities have been developed and established in the University to provide assistance to the students in their studies as well as other related activities and leisure. These facilities and establishment are briefly described below:

11.1 RESIDENTIAL ACCOMMODATION

The MUET hostels have rich legacy of academic excellence and responsible community life. It is an affordable, homely and safe accommodation for almost 1000 male and female Pakistani, overseas Pakistani and foreign students. Almost all eight, including three female students', hostels are spacious and airy two-storied buildings, located near to the main academic buildings, with well-furnished rooms to accommodate two to three students. Every student is allotted a bed, a cupboard, a study table and a chair. The premises of male and female hostels are separate and the messing system and cleanliness of hostels supervised by male and female wardens respectively.

The University is not bound to provide hostel accommodation to every student, even if he/she is entitled. However, accommodation is provided to the male and female students seeking admission only in undergraduate studies at various departments / institutes of the University subject to availability and according to the merit. The interested students can apply Online through a prescribed Admission Form MUH-I &II. The seats in the hostels are allotted by allocating the eligible district-wise quota proportional to seats allocated for admission in university. Further the district-wise seats are allotted to the students on first come first served basis, **excluding the districts where the bus service is provided by the University (like Jamshoro, Hyderabad, Matiari, Tando Allahyaar, Tando Muhammad Khan and Mirpurkhas).** The cases of the interested applicants belonging to the above-mentioned districts and far-flung areas thereof may be considered, in case of availability of seats after regular allotment is done. The seats allotment process is fully transparent. The University administration reserves the right to reject any application for allotment or cancel the allotment of any student at any stage without assigning any reason.

Purified drinking water and hot / cold water is available around the clock. Separate canteens / messes with common dining halls are available in each hostel with around to 30 to 40 students siting capacity and offer meals, tea, juice and soft drink at modest prices. The menu and quality of the food are regulated by the students' mess committee. The quality of food and hygiene is monitored by the Internal Hostel Food Quality Committee as well as University's Food and Service Committee. The common halls are well equipped with recreational facilities like large wall-mounted televisions. Most of the hostels have outdoors basketball courts and inter-hostels sports events and debate contests are organized regularly in collaboration with Directorate of Sports. A state-of the-art Gymnasium is located near the hostel buildings to provide health care and fitness facilities from morning till 9:00 PM. An ATM electronic banking service is nearby available around the clock. All the hostels' residents have been provided with transport facility from morning till 9:00 PM. All hostels offer lush green lawn for the students to sit and relax, beautiful natural surroundings, mango, guava and banana orchard, green environment conducive for studies, calm & quite atmosphere, pollution free and safe & secured environment with 24 hours security surveillance. Security guards have been deployed on main entrances of male and female students' hostels round the clock to ensure the strict security. The CC Tv cameras are installed in all the hostels to monitor the activities of staff, visitors and residents of hostels by Provost Hostels.

All the students are required to abide by the rules and regulations governing residence and are encouraged to develop community life conducive to healthy growth of the social aspects of their personalities.

For further information, please contact:

1. **Prof. Dr. Amir Mahmood Soomro**
   Provost Hostels,
   Tel. No. 022 2109137 / Ext. No. 3005
   Email:
   provost.hostels@admin.muet.edu.pk

2. **Dr. Zulfiqar Ali Solangi**
   Deputy Provost,
   Ext. No. 3006
   Email:
   zulfiqar.solangi@faculty.muet.edu.pk

3. **Dr. Sahib Khatoon**
   Deputy Provost (Female)
   Ext. No. 6603
   Email:
   sahib.khatoon@faculty.muet.edu.pk

4. **Mr. Khalid Hussain Bhatti**
   Deputy Director (Hostels Mgt.)
   Tel. No. 022 2109135 / Ext. No. 2031
   Email:
   khalid.bhatti@admin.muet.edu.pk

11.2 LIBRARY FACILITIES

The Mehran UET, Library & Online Information Center contains more than **182800** books related to Engineering Science and Technology. The library has online e-resources under Higher Education Commission Digital Library Program. The access **of 11 e-databases** for electronics Research journals, Research thesis online e-books available under e-brary program which are accessed within the University campus and outside the campus in full text format.

There are more than **32004** text books in the Book Bank which are loaned to students for one term on nominal rent. The collection of books is updated continuously and new books are acquired on the recommendations of experienced faculty members, which makes collection most suited and beneficial to graduate and under-graduate students. In addition, latest reference and other books are also acquired every year to keep the users of the library abreast with the latest information on Science & Technology specially engineering and its allied subjects.

In addition to providing the readers with in-house collection, services are also provided for inter-library loan and photocopying of literature including technical information centers within and outside Pakistan.

The Mehran UET Library & Online Information Center also offers following services:

- The E-Resources for Online Classes have been established to support the students during COVID-19 and are available on the following link:
- library.muet.edu.pk/ebooks.php
- MUET Library & Online Information Center offer service of e-resources to under graduate, post graduate students and faculty members for their research project, assignments online classes through Library Web page during the **COVID-19.**
- The MUET Library provides the facility of Multimedia & Research Development Center, which includes softcopy of books, CD/DVD Writing, Scanning and printing to students, faculty members and researchers. Multimedia & Research Center also provide space for researcher with I-7 Computer (Wireless Headphones; Hi Fi Audio system) connected with Wi-Fi Networks. Full access of HEC Digital Library provided possible assist to create bibliography of work electronically (Endnote, Mendeley, Zotero). In Multimedia & Research

development Center research articles and e-books are provided to the faculty members and students on their demands.

- The MUET library offer the trainings program regarding awareness of HEC digital library resources ebrary, science direct and IEEE to the students of all faculties of the University.
- There are also blogs muetloic.blogspot.com to give the awareness trainings regarding HEC Digital Library, muetloiceresources.blogspot.com/ access of E-books, Journals, Tutorials and Thesis's Guidance, video lectures, dictionaries and encyclopedias etc.
- The Catalog of books is computerized and accessible to the library of Congress gateway loc.gov/z39.50 serving one point access interface for books catalog, full text electronic journals, and e-books on the web.
- Koha Catalogue is also available with check in check out system for library users on opac.muet.edu.pk
- The MUET Library & Online Information Center also offered Wi-Fi service in the whole Library inside/outside Building.
- The library is open from 8:00 am to 12:00 Midnight whole the year heavily used by undergraduate and postgraduate students, faculty members, and researchers.
- Professional staff available at service points to meet the needs of the readers. Besides this under the library system program, seminar libraries have been established in various institutes/ departments.

For further information, please contact:

Zahid Hussain Sahito
Librarian
Tel. No. 022-2771169 / **Ext. No.** 6300
Email: librarian@admin.muet.edu.pk

11.3 INFORMATION & COMMUNICATION PROCESSING CENTRE

The ICPC (Information and Communication Processing Center) serves as the foundation of our university, providing essential networks for seamless communication among departments and facilitating internet and voice communication. Through a high-speed fiber link with an impressive bandwidth of 612 Mbps, the ICPC connects the MUET Intranet to the outside world, ensuring a reliable and efficient connectivity.

At the heart of the ICPC lies a robust and scalable switching fabric, enabling the transmission of gigabit traffic over our fiber optics backbone. This advanced infrastructure interconnects all key buildings on campus, including the administration building, departments, and hostels. Our network is built on VLAN technology, ensuring efficient management and segmentation for enhanced performance.

In addition to delivering reliable data services, the ICPC also provides cutting-edge voice services through the modern Alcatel-Lucent OmniPCX 4400 EPABX system, which has been serving our university since 2003. This system enables seamless voice communication within our university community.

As part of our commitment to delivering comprehensive services, the ICPC offers the following facilities and services throughout our university:

- Data and Voice Services: Ensuring seamless connectivity and communication for both data and voice traffic.

- Wireless Connectivity: Providing blanket coverage of wireless internet access across our entire campus, empowering our community to stay connected from anywhere.
- Training & Internships for Employees & Students: Offering valuable training programs and internships to enhance the skills and knowledge of our employees and students in the realm of information and communication technologies.
- Smart ID Cards for Employees & Students: Equipping our community with smart identification cards that go beyond traditional identification, providing additional features and functionalities.
- Security Surveillance System: Implementing a comprehensive security surveillance system to ensure the safety and well-being of our university premises.
- Email Service: Enabling reliable and secure email communication for all members of our university community.
- SMS Alert Service: Keeping our community informed and updated through SMS alerts and notifications, ensuring timely dissemination of important information.
- Web Services: Providing a range of web services, hosting and managing websites to support various academic and administrative needs.

These services and facilities offered by the ICPC contribute to fostering a technologically advanced and interconnected environment within our university, empowering our community to thrive and succeed in their academic pursuits.

- **Surveillance System**

The University has a state-of-the-art surveillance system (a closed-circuit television system) to with a central control room to maintain close observation to the students, visitors and employees of the University within the University premises around the clock to reduce the level of all risks associated with higher education institutions.

Engr. Sajidullah Memon
Director ICPC
Phone: (022) 2772250 Ext: 2090
Email: director.icpc@admin.muet.edu.pk

11.4 MEDICAL ASSISTANCE

A double-bed clinic located at Student-Techer Center provides medical facilities from 4:00 to 6:00 in the evening for residents of boys' hostels and a part-time dispensary has been established in one of the female hostels for the residents, which is manned by a qualified doctor and a dispenser. Adequate quantities of essential medicines are also available in the dispensary for the minor ailments. Major sickness problems are referred to nearby hospital. Besides that, day and night emergencies are attended by the ambulance service and duty vehicle which are available for 24/7. For further information, please contact:

Dr. Aamir Mehmood Soomro,
Provost Hostels,
Tel. No. 022 2109137/**Ext.** No. 3005
Email: provost.hostels@admin.muet.edu.pk

11.5 TRANSPORT FACILITIES

The University maintains a comprehensive fleet of buses designed to ensure convenient transportation for students, faculty, and staff. These buses operate on multiple routes, connecting the campus with key locations in the surrounding areas. To avail themselves of this facility, students are required to pay a nominal transportation fee.

In addition, the University efficiently manages a diverse range of specialized vehicles and equipment dedicated to maintaining campus cleanliness and supporting an environmentally friendly atmosphere.

Mr. Fawad Ahmed Lashari
Additional Registrar (Transport Section)
Phone: +92-22-2109073, +92-22-2771153 /
Ext. 6800 www.muet.edu.pk/transport-section

11.6 SPORTS FACILITIES

The Directorate of Sports has been arranging a wide range of indoor as well as outdoor sports activities and provides health and fitness facilities to the University students on daily basis. The University has a keen interest in arranging facilities of highly specialized training, coaching camps along with indoor and outdoor sports events for students residing on and out of campus. HEC Inter University Sports events, Intra-batches, Intra departmental and Inter-Hostel Sports events for Boys & Girls are regular features of the University.

We have a state-of-the-art Sports Complex in campus, having a modern Gymnasium and fitness center that is, equipped with latest fitness tools to provide our students best possible health and Sport activities in a better environment.

The University also hosts/ organizes and participates in a number of HEC Inter-University Sports events organized under HEC annually. The University students have been winning these tournaments and awarded with Gold, Silver and Bronze Medals respectively. Every incoming batch is encouraged to participate and represent the University team in Intra Departmental, Inter Hostels, Intra Batches and HEC Inter University events particularly in Athletics, Cricket, Football, Volleyball, Handball, Basketball, Squash, Table Tennis, Tennis, Badminton, Hockey, Tug of War, Chess, Judo, Wushu, Body Building, Weight lifting, Swimming, Gymnastics and Boxing etc.,

One of the most popular events at the University is the Annual Sports Week/ Gala, where a large number of students participate in both indoor and outdoor Sports competitions.

Abdul Fatah Kandhir
Director Sports,
Ph.: 022-2109103, 022-2772250 (Ext: #2026)
Email: dir.sports@admin.muet.edu.pk

11.7 STUDENT FINANCIAL AID OFFICE

The primary objective is to provide assistance through Scholarships, Financial Assistance /Aid, Zakat and Educational Loans (Qarz-e-Hasna) programs, to the students who are unable to pursue their higher education due to financial barriers. To accomplish the main objective, the office also establishes the following objectives:

- To provide financial relief to the meritorious and needy students.
- To provide quality advising services by addressing individual student needs, responding to student inquiries in a timely manner.
- To use effective procedures to ensure that the funds are provided to students who demonstrate the greatest financial need.
- To comply with all prescribed rules, regulations, and policies of financial aid and scholarship programs as set by the Donor Agency and the University.

11.8 DIRECTORATE OF INDUSTRIAL LIAISON

A Directorate of Industrial Liaison has been established in the University to facilitate the organization of industrial/ field training for the students of the University. In addition to arranging the practical training for the undergraduate students, the Directorate of Industrial Liaison also performs the following functions:

- To collaborate with the industries for identifying their problems and attempting to solve them through efforts of experienced and qualified professors of the University.
- To arrange exchange of technical staff between the University and industry for the mutual; benefit of the both.
- To guide and supply information to the final year students regarding their possible employment in the industrial/commercial sector.
- To arrange internships during summer and winter vacations for the students.

Further information may be obtained from:

Director,
Industrial Liaison,
Ph: 022-2771425

11.9 STUDENTS' ADVISORY COMMITTEE

Introduction of the Office of Advisor Students' Affairs

Mehran University Students' Advisory Committee was formed to bridge the gap between the administration, teaching community, and students. The Committee helps students to organize academic and social activities and to resolve their academic and legal grievances.

Role of the Students' Affairs Office

The committee leads, directs, and administers overall functions of student societies, student counseling, hostel residence allocation, as well as matters related to disciplinary issues. The important role of the

Student Affairs Office is to enhance the quality of student experience both in and outside of the classroom.

The Advisory Committee also provides proactive support and capacity-building services to promote co-curricular activities to enhance the interpersonal skills of the students.

Achievements of the Directorate / Center / Section / Office

The Student Affairs Office has maintained a friendly environment to guide the students. It manages their needs from the time they step in the University until their graduation. We provide proactive support and capacity building services to promote healthy co-curricular activities to enhance interpersonal skills of the students. Using the platform of the Students' Affairs Office, students have built strong relationships with their peers, faculty, administration, and other stakeholders of the University.

The Mehran University Students' Advisory Committee is composed of the following members:

Prof. Dr. Tanweer Hussain Advisor Students' Affairs Landline: 0222772251-72 (Ext: 2030) Email: tanweer.hussain@faculty.muet.edu.pk	**Dr. Shumaila Memon** Deputy Advisor Student' Affairs Landline: 0222772251-72 (Ext: 6600) Email: shumaila.memon@faculty.muet.edu.pk
Dr. Muhammad Shuaib Shaikh Deputy Advisor Students' Affairs Email: shuaib.shaikh@faculty.muet.edu.pk	**Dr. Nasrullah Pirzada** Deputy Advisor Student' Affairs Landline: 0222772251-72 (Ext: 6013) Email: nasrullah.pirzada@faculty.muet.edu.pk
Dr. Isma Farah Siddiqui Deputy Advisor Student' Affairs Landline: 0222772251-72 (Ext: 6907) Email: isma.farah@faculty.muet.edu.pk	**Engr. Junaid Ahmed Baloch** Deputy Advisor Students' Affairs Landline:0222772251-72 (Ext: 6917) Email: junaid.baloch@faculty.muet.edu.pk
Dr. Samander Ali Malik Deputy Advisor Students' Affairs Landline: 0222772251-72 (Ext: 2512) Email: samander.malik@faculty.muet.edu.pk	

11.10 INTERNATIONAL MEMBERSHIP OF THE UNIVERSITY

11.10.1 The University maintains the memberships of the following International Institute:

1. Association of Commonwealth Universities (ACU) UK- 1998-99.
2. UNESCO International Centre for Engineering Education (UICEE), Australia-2000.
3. Federation of the Universities of Islamic World (FUIW), Rabat, Morocco-1999.
4. Commonwealth Universities Study Abroad Consortium (CUSAC), UK 2000-2001.
5. Community of Science (COS) USA-2001
6. IEEE Inc USA
7. APQN – Asian Pacific Quality Network – 2007.

11.10.2 The University has Signed Memorandum of Understanding with the Following Foreign Universities / Institutes during the Years 2022-2025:

LIST OF MOUs		
Sr. No.	**Name of Company/Institute/Organization**	**Date of MoU Signed**
MoUs Signed Between 2024-2025		
1.	Komatsu Pakistan Mining (SMC-Private) Limited	20-11-2025
2.	Chaloo	21-11-2025
3.	National Commission for Human Development	29-09-2025
4.	Harbin Electric International Company Ltd.	16-09-2025
5.	Politecnico Di Torino University, Italy	23-08-2025
6.	National Grid Company of Pakistan	23-07-2025
7.	Ciriaf University of Perugia, Italy	02-07-2025
8.	Toronto Metropolitan University Toronto, Ontario, Canada	26-06-2025
9.	TechTalks.pk	24-05-2025
10.	National Database and Registration Authority Nadra	24-02-2025
11.	Research and Development Fund	14-11-2024
12.	Times	13-11-2024
13.	Zakat/Need Cum Merit Scholarship	16-10-2024
14.	Pakistan Cables Limited	15-10-2024
15.	Jamshoro Power Company Limited (JPCL)	04-10-2024.
16.	Tie Islamabad the Indus Entrepreneurs	10-09-2024
17.	Zindigi Prize / JS Bank	29-09-2024
18.	Sindh Economic Zones Management Company (SEZMC)	30-09-2024
19.	National Incubation Centre, Hyderabad	12/6/2024
20.	Confucius Class Room at Cadet College, Petaro	07-08-2024
21.	Civil Society Support Program (CSSP)	-
22.	Civil Aviation Training Authority Institute (CATAI), Hyderabad	26-02-2024
MoUs Signed Between 2023-2024		
1.	University Tun Hussein Onn, Malaysia	03-03-2023
2.	Center of Stretchable and Textile Electronics (CESTE)	03-04-2023
3.	Advon Industries Private Limited	23-05-2023
4.	Red Marker System (Pvt.) Ltd.	07-06-2023
5.	Fast Cables Limited	17-11-2023
6	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	15-12-2023

Sr. No.	Name of Company/Institute/Organization	Date of MOU Signed
MoUs Signed Between 2022-2023		
1.	Samane Shifa Foundation, Pakistan	10-05-2022
2.	Smart Mentor Fz-Llc, Dubai, UAE	05-10-2022
3.	Lahore College For Women University, Lahore (LCWU)	01-07-2022
4.	Archroma – Life Enhanced	01-08-2022
5.	Universiti Kebangsaan, Malaysia	01-08-2022
6.	International Institute of Digital Forensic Science & Technology (21DFST), Karachi	22-09-2022
7.	Hamdard University, Karachi	07-12-2022
8.	Pakistan Japan Intellect Forum (PJIF)	26-12-2022
9.	Guangzhou City Construction College (GZCCC), China	30-12-2022