POSTGRADUATE PROSPECTUS FOR THE ACADEMIC SESSION 2025

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 admissions@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.

OUR MAJOR ACHIEVEMENTS

UNIVERSITY OF TODAY – WORKING FOR TOMORROW

- In the Times Higher Education - Young University Rankings 2024, our university achieved a Global Rank of 435th.
- In the Times Higher Education - Asian Rankings 2024, our university achieved an Asian rank of 444th.
- For UI Green Metric Rankings 2024, MUET university is ranked 1st among public sector engineering universities in Sindh and 2nd in Pakistan. Globally, MUET was ranked at 478th position.
- In the Times Higher Education - Interdisciplinary Science Rankings 2025, MUET ranked 251-300th globally, 12th in Pakistan and 1st in Sindh among public sector engineering universities.
- In the QS - Asian Rankings 2025, MUET ranked 561-580th globally, 10th in Pakistan and 2nd in Sindh among public sector engineering universities.
- In the Times Higher Education - World University Rankings 2025, MUET ranked 1201-1500th globally, 9th in Pakistan and 1st in Sindh among public sector engineering universities.
- 14 Patents registered
- Lifelong Learning Resource Centre Established
- FM Radio Frequency 96.2 Allotted
- Five start-up Companies Registered
- 200+ PHD faculty members
- Internationally published books by faculty
- First ever UNESCO/ICTP Regional Workshop on "FGPA Design for scientific instrumentation" held at MUET (indico.ictp.it/event/a14228/)
- Innovation & Entrepreneurship Centre (IEC) Established (iec.muet.edu.pk)
- US-Pak center for advanced studies in Water (USPCAS-W) Established (Water.muet.edu.pk)
- Baby Day Care Centre Established
- 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
- DICE Energy & Water (DEW'1 First ever in history of MUET (dew.muet.edu.pk)
- Gender policy introduced by MUET, Jamshoro at:
- (www.muet.edu.pk/sites/default/files/MUET-Gender-Policy-Statement.pdf)
- 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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INTRODUCTION

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.

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*.

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**
- **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.

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

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

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 showcasing 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. Dur Muhammad Pathan	0243-9280312
4.	Dean, Faculty of Electrical, Electronic and Computer Engineering	Prof. Dr. Ashfaque A. Hashmani	022-2771558
5.	Dean, Faculty of Mechanical Process and Earth Engineering	Prof. Dr. Khanji Harijan	022-2771312
6.	Dean, Faculty of Science, Technology and Humanities	Prof. Dr. Abdul Sattar Larik	022-2771352
7.	Dean, Faculty of Architecture and Civil Engineering	Prof. Dr. Rizwan Ali Memon	022-2771638
8.	Director, Postgraduate Studies	Prof. Dr. Abdul Haque Tunio	022-2771214
9.	Director, Institute of Information and Communication Technologies	Prof. Dr. Nighat Arbab Kalhoro	022-2772253
10.	Director, MU Institute of Science, Technology, and Development	Prof. Dr. Asif Ali Shah	022-2772431
11.	Director, Institute of Environmental Engineering and Management	Prof. Dr. Abdul Razaque Sahito	022-2772253
12.	Director, Institute of Petroleum and Natural Gas Engineering	Prof. Dr. Muhammad Khan Memon	022-2771241
13.	Director Quality Enhancement Cell	Prof. Dr. Sheeraz Ahmed Memon	022-2109017
14.	Registrar	Mr. Lachman Das Soothar	022-2771371
15.	Director Finance	Mr. Irfan Shaikh	022-2771442
16.	Director Admissions	Mr. Saleem Siddiqui	022-2771704
17.	Director Services	Mr. Qazi Riaz Hassan Qureshi	022-2109073
18.	Director, Works & Strategic Planning	Mr. Saghir Ahmed Memon	022-2771311
19.	Director, ICPC	Engr. Sajidullah Memon	022-2772250
20.	Controller of Examinations	Sayed Muhammad Raza Shah	022-2771631
21.	Librarian	Mr. Zahid Hussain Sahito	022-2771169
22.	Director, Sports	Mr. Abdul Fatah Kandhir	022-2109103
23.	Resident Auditor	Mr. Sagheer Ahmed Chandio	022-2772285
24.	Advisor Students' Affairs	Prof. Dr. Abdul Fateh Abbasi	022-2772251
25.	Provost (Hostels)	Dr. Amir Mehmood Soomro	022-2772299

1. REGULATIONS FOR DEGREE PROGRAMS

(A) MASTERS DEGREE:

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. ELIGIBILITY FOR ADMISSION

i. 2.0 CGPA

a) 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 of university 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 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.

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.

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.

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 is depicted in Figure-1.

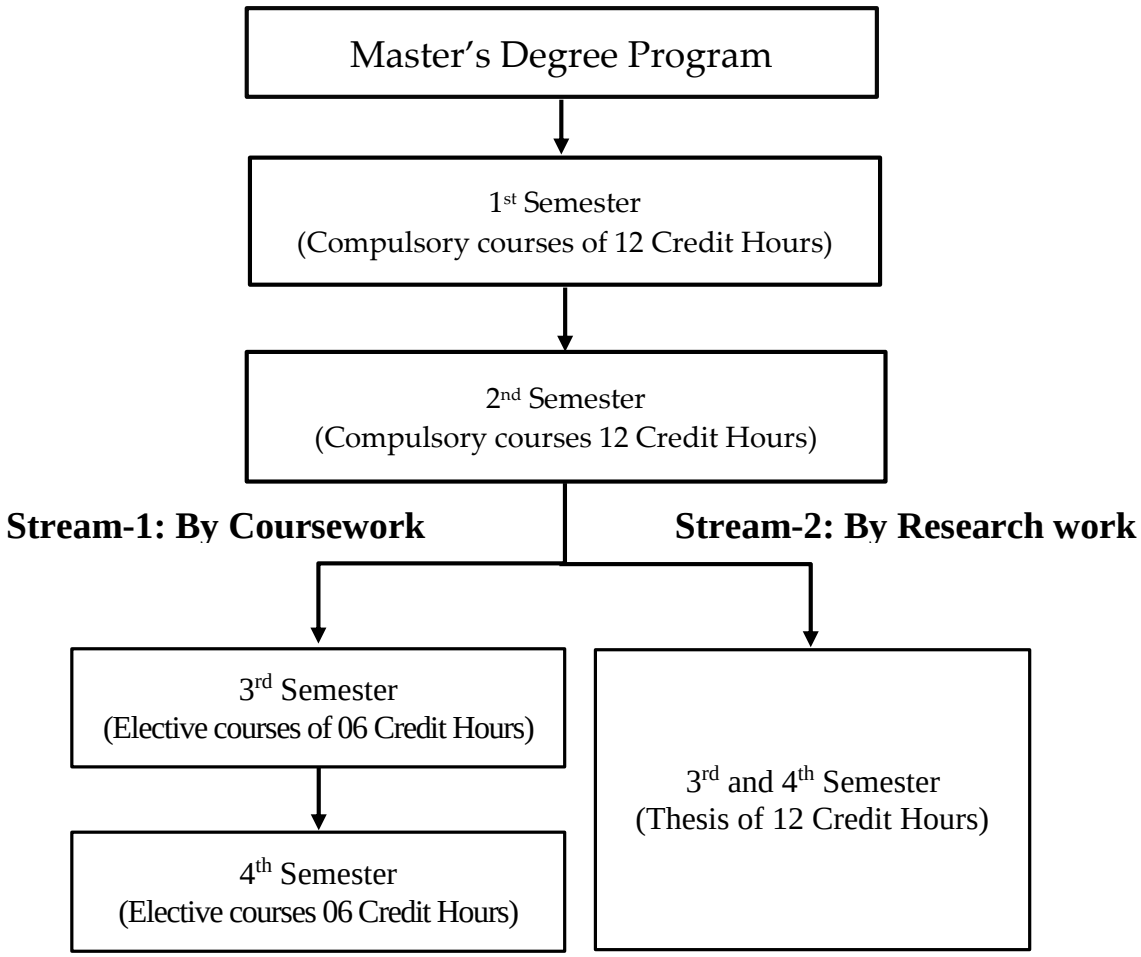

Figure-1: Flowchart of Master's Degree Program at MUET

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:

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

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 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
- 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

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 and for practical course 1 C.H be considered as 3 contact hours.

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. = $4x3 = 12$

3. 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.

$$\text{GPA} = \frac{\text{Sum of Quality Points}}{\text{Sum of the Credit hours}}$$

4. 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.

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.

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.

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.

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.

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.

12. AMENDMENT TO REGULATIONS

These Regulations may be amended from time to time as deemed fit by the authorities of the Mehran University of Engineering & Technology, Jamshoro.

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(B) PH.D DEGREE:

1. 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. 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.

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 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.

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.

5. 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

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 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

3. 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.

$$GPA = \frac{\text{Sum of Quality Points}}{\text{Sum of the Credit hours}}$$

4. 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.

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

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.

7. 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.

8. 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

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. EXTERNAL EVALUATION OF PHD DISSERTATION

i. The PhD dissertation must be evaluated by:

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

i. 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**

ii. 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).

15. PHD 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.

16. 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.

17. COMPLETION REPORT

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

18. 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.

1. DIRECTORATE OF POSTGRADUATE STUDIES

(A). MASTERS 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 Degree programs are offered by the Directorate of Postgraduate Studies in:

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


1. ARCHITECTURE

1.1 INTRODUCTION

The M.Arch. program, starting in Winter 2025, offers two modules one is 2-year Master in Architecture curriculum that is by taught course. The second module offer a (24 credit hour) by course and research thesis (12 credit hours). For an M.Arch. degree, students must complete total 36 credit hours.

Students in the M.Arch. program will emphasis on research-based architectural design studio projects. this focus enables a more intellectual and theoretical basis in the architectural projects addressed within the program at the same time contribute to the development of architecture within the National framework; that emphasizes on the sustainable development. 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.

1.2 PROGRAM MISSION

The M.Arch. program corresponds to the relevant interests of various stakeholders such as institutions, educators and members of the practicing profession (IAP), regulatory and registration body (PCATP), building Industry and the society at large. The program addresses environmental issues such as ‘Climate Change’ and ‘Sustainable’ approach to human life and material resources.

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 involve the students in research of Architecture.
ii). To motivate and direct the professional architects to go through various streams of specialization in Architecture.

1.4 ACADEMIC STAFF

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

Chairperson: **Mr. Muazam Ali Pathan** M.Arch., (MUET, Pakistan)	**Ms. Raheela Laghari** ME Civil Engineering, (MUET, Pakistan)
Mr. Irfan Ahmed Memon M.Arch., (MUET, Pakistan)	**Ms. Shahnila Ansari** ME Civil Engineering, (MUET, Pakistan)
Dr. Sabeen Qureshi PhD, (Malaysia)	**Ms. Naheed Rohail** MSIT, (MUET, Pakistan)
Dr. Saima Kalwar PhD, (Malaysia)	**Ms. Firdous Soomro** M.Arch., (MUET, Pakistan)

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

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			
5.	Advanced Architectural Design Studio-II	(1+2)	150
6.	Urban Form Study	(2+0)	50
7.	Heritage Conservation	(3+0)	100
8.	Urban Design	(2+0)	50
9.	Neighborhood Revitalization	(2+0)	50

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

Fourth Semester						
12.	Elective-IV	0+2	100	Thesis	6+0	200
13.	Elective-II	3+0	100			

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

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.

2. CITY AND REGIONAL PLANNING

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 course work/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 research project/thesis for the third and fourth semesters according to their study modes of choice. Both the 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.

2.2 PROGRAM 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 grab the expertise to play their part in a professional way for sustainable urban and regional development.

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.

2.4 ACADEMIC STAFF

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)

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

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			
5.	Advanced Research Methods	3 – 0	100
6.	Integrated Transportation Planning	3 – 0	100
7.	Urban Land Management	3 – 0	100
8.	Development Planning in Pakistan	3 – 0	100
Total Credit Hours		**12**	

STREAM-I (MASTERS BY COURSE)				**STREAM-II (MASTERS BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	-	-	Thesis	6+0	200
10.	Elective-II	-	-			
Total Credit Hours					**6**	
Fourth Semester						
12.	Elective-III	-	-	Thesis	6+0	200
13.	Elective-IV	-	-			
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

2.7 CAREER OPPORTUNITIES

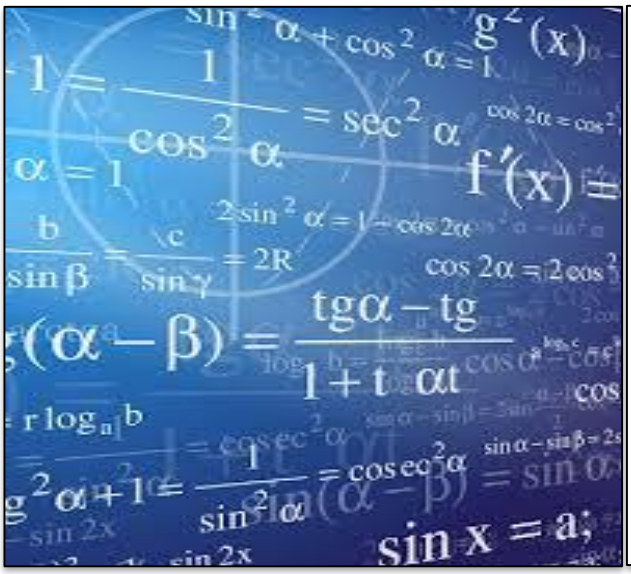
After qualifying, our graduates can serve the nation as Professional Planners in public or semi-public sector organizations. Development authorities in major cities including Karachi Development Authority (KDA), Hyderabad Development Authority (HDA), Lahore Development Authority (LDA), Capital Development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

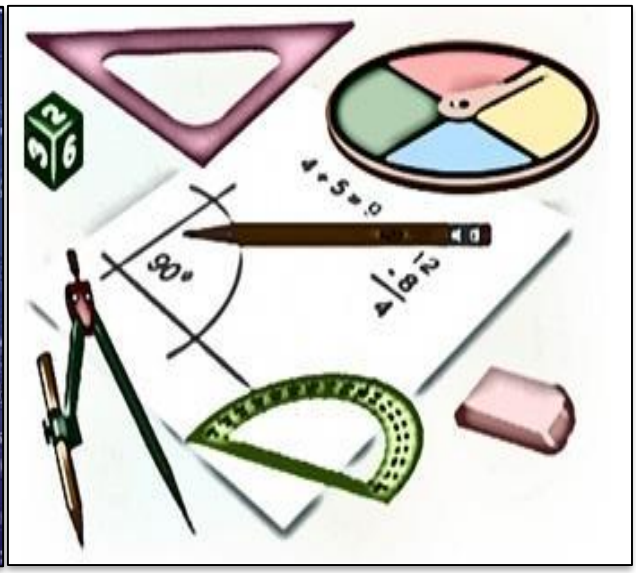
city district governments and municipal corporations/ committees also hire Town Planners in gazette positions.

Other government organizations where Town Planners are hired to include Sindh Building Control Authority (SBCA), Planning and Development (P&D), Ministry of Defense, Civil Aviation Authority (CAA), Pakistan Army, 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.

A number of 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.





3. APPLIED MATHEMATICS

3.1 INTRODUCTION

The department is offering admission in M.Phil. in Applied Mathematics since 2014. This degree is compatible with the engineering disciplines. 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 to pursue a variety of other opportunities in which a strong mathematical background is important, contributing to the development in general 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.

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.

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.

3.4 ACADEMIC STAFF

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

Professor and Chairman: **Dr. Muhammad Anwar Solangi** PhD, (MUET, Pakistan)	**Dr. Fozia Shaikh** PhD, (MUET, Pakistan)

Professor: **Dr. Syed Feroz Shah** PhD, (China)	**Dr. Kashif Ali Abro** PhD, (NED, Pakistan)
Dr. Asif Ali Shaikh PhD, (UoS, Pakistan)	**Mr. Hameer Akhter Abro** M.Phil., (ISRA, Pakistan)
Associate Professor: **Dr. Sania Qureshi** PhD, (UoS, Pakistan)	**Mr. Ali Asghar Sangah** M.Phil., (MUET, Pakistan)
Dr. Muhammad Mujtaba Shaikh PhD, (UoS, Pakistan)	**Dr. Sara Mahesar** PhD, (UoS, Pakistan)
Assistant Professor: **Mr. Abdul Saleem Memon** M.Phil., (UoS, Pakistan)	**Mr. Mansoor Ali Bhagat** M.Phil., (SALU, Pakistan)
Dr. Imran Qasim Memon PhD, (MUET, Pakistan)	**Lecturer:** **Mr. Shafqat Chandio** M.Phil., (UoS, Pakistan)
Ms. Zaib un Nisa Memon M.Phil., (UoS, Pakistan) - ***On Study Leave***	**Mr. Sher Khan, Lecturer** M.Phil., (MUET, Pakistan)
Mr. Muhammad Urs Jhatial M.Phil., (Sindh University)	**Dr. Prem Kumar** PhD, (MUET, Pakistan)
Dr. Saima Qadri PhD, (MUET, Pakistan)	

3.5 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

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			
5.	Research Methodology	(3+0)	100
6.	Advanced Differential Equations	(3+0)	100
7.	Computational Fluid Dynamics	(3+0)	100
8.	Operations Research and Optimization	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	6/200	Thesis	6+0	200
Fourth Semester						
10.	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

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. CIVIL ENGINEERING

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 Masters 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.

4.2 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.

4.3 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 ACADEMIC STAFF

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

Professor & Program Coordinator: **Dr. Ashfaque Ahmed Memon** PhD, (MUET, Pakistan)	**Dr. M. Rehan Hakro** PhD, (MUET, Pakistan)

Meritorious Professor: **Dr. Tauha Hussain Ali** PhD, (Australia)	**Lecturer:** **Dr. Shabir Hussain Khahro** ME, (Malaysia) - ***On Lien***
Professor: **Dr. Aneel Kumar** PhD, (Japan)	**Mr. Ali Murtaza Phul** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Rizwan Ali Memon PhD, (MUET, Pakistan)	**Mr. Fahad Ali Shaikh** ME, (QUEST, Pakistan)
Dr. Nafees Ahmed Memon PhD, (Romania)	**Mr. Fida Hussain Siddiqui** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Agha Faisal Habib PhD, (UK)	**Mr. Lal Chand Marwari** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Zaheer Almani PhD, (UK)	**Mr. Muhammad Ali Moriyani** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Fareed Ahmed Memon PhD, (Malaysia)	**Mr. Anees Ahmed Vighio** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Naeem Aziz Memon PhD, (UK)	**Mr. Manoj Kumar** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Ashfaq Ahmed Pathan PhD, (MUET, Pakistan)	**Mr. Rabinder Kumar** ME, (MUET, Pakistan) - ***On Study Leave***
Assistant Professor: **Mr. Azizullah Jamali** ME, (QUEST, Pakistan)	**Mr. Hafiz Usama Imad** ME, (MUET, Pakistan)
Mr. Arshad Ali Memon ME, (MUET, Pakistan)	**Mr. Abdul Qudoos Malano** ME, (MUET, Pakistan)
Mr. Samar Hussain Rizvi ME, (NED, Pakistan)	**Mr. Izat Ali Sahito** ME, (MUET, Pakistan)
Mr. Amjad Ali Pathan ME, (MUET, Pakistan)	**Mr. Muhammad Saleem Raza** ME, (MUET, Pakistan) - ***On Contract***
Mr. Masroor Ali Jatoi ME, (MUET, Pakistan) - ***On Study Leave***	**Miss Maroosha Larik** ME, (MUET, Pakistan) - ***On Contract***
Engr. Abdul Raqeeb Memon ME, (MUET, Pakistan)	**Mr. Ali Raza Lashari** ME, (MUET, Pakistan) - *On Contract*
Dr. Ali Raza Khoso PhD, (Malaysia)	**Lab Engineer:** **Dr. Fahad Ur Rehman Abro** PhD, (South Korea)
Mr. Farhan Qureshi ME, (MUET, Pakistan)	

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 required (available) lab is:

1. Software Laboratory

The following labs are also available to carry out experiment-based research:

1. Soil Mechanics
2. Highway Engineering
3. Concrete
4. Materials Testing
5. Hydraulics
6. Environmental Engineering
7. Surveying
8. Engineering Geology

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			
6.	Advanced Structural Design	(3+0)	100
7.	Irrigation Management	(2+0)	50
8.	Advanced Foundation Engineering	(2+0)	50
9.	Geometrical and Pavement Design	(3+0)	100
10.	Water Supply and Sanitation Engineering	(2+0)	50

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
11.	Rock Engineering	2+0	50	Thesis/ Project Part-I	0+6	200
12.	Traffic Engineering	2+0	50			
13.	Solid Waste Management	2+0	50			
Fourth Semester						
14.	Analysis and design of bridges	2+0	50	Thesis/ Project Part-II	0+6	200
15.	Water logging and salinity control	2+0	50			
16.	Procurement and contract management	2+0	50			

4.7 CAREER OPPORTUNITIES

The graduates of the Masters 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, repair and 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.

5. CONSTRUCTION MANAGEMENT

5.1 INTRODUCTION

The Masters 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 global best 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.

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.

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.

5.4 ACADEMIC STAFF

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

Meritorious Prof. and Prog. Coordinator: **Dr. Tauha Hussain Ali** PhD, (Australia)	**Mr. Fida Hussain Siddiqui** ME, (MUET, Pakistan) - ***On Study Leave***
Professor and Program Coordinator: **Dr. Nafees Ahmed Memon** PhD, (Romania)	**Mr. Muhammad Ali Moriyani** ME, (MUET, Pakistan) - ***On Study Leave***
Assistant Professor: **Dr. Ali Raza Khoso** PhD, (Malaysia)	**Mr. Anees Ahmed Vighio** ME, (MUET, Pakistan) - ***On Study Leave***
Lecturer: **Dr. Shabir Hussain Khahro** ME, (Malaysia) - ***On Lien***	**Mr. Muhammad Saleem Raza** ME, (MUET, Pakistan) - ***On Contract***

5.5 LABORATORY FACILITIES

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct experiments and demonstrations in Construction Management.

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

1. Soil Mechanics Laboratory
2. Highway Engineering Laboratory
3. Engineering Geology Laboratory
4. Concrete Laboratory
5. Engineering Mechanics Laboratory
6. Environmental Engineering Laboratory
7. Hydraulics Laboratory
8. Software Laboratory
9. Surveying Laboratory

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			
6.	Research Methods in Construction Management	(3+0)	100
7.	Construction Safety Management	(3+0)	100
8.	Quality Management & Construction Performance	(3+0)	100
9.	Automation in Construction	(2+0)	50

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

10.	Construction Law	(2+0)	50	Thesis	6+0	200
11.	Construction Supply Chain	(2+0)	50			
12.	Human Resource Management	(2+0)	50			
Fourth Semester						
13.	Elective-I	(2+0)	50	Thesis	6+0	200
14.	Elective-II	(2+0)	50			
15.	Elective-III	(2+0)	50			

The following is a list of elective courses:

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

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.

6. STRUCTURAL ENGINEERING

6.1 INTRODUCTION

A Masters of Engineering (M.E.) 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 (Masters by Course) and Stream-II (Masters 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.

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.

6.3 PROGRAM OBJECTIVES

The objectives of the M.E. 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.

6.4 ACADEMIC STAFF

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

Professor & Program Coordinator: **Dr. Fareed Ahmed Memon** PhD, (Malaysia)	**Mr. Samar Hussain Rizvi** ME, (NED, Pakistan)

Professor: **Dr. Aneel Kumar** PhD, (Japan)	**Mr. Amjad Ali Pathan** ME, (MUET, Pakistan)
Dr. Nafees Ahmed Memon PhD, (Romania)	**Mr. Masroor Ali Jatoi** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Zaheer Ahmed Almani PhD, (UK)	**Lecturer:** **Mr. Fahad Ali Shaikh** ME, (QUEST, Pakistan)
Assistant Professor: **Mr. Azizullah Jamali** ME, (QUEST, Pakistan)	**Lab Engineer:** **Dr. Fahad Ur Rehman Abro** PhD, (South Korea)

6.5 LABORATORY FACILITIES

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct Structural Engineering experiments.

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

1. Concrete Laboratory
2. Materials Testing Laboratory

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			
5.	Pre-stressed Concrete Design	(3+0)	100
6.	Soil Mechanics and Foundation Engineering	(3+0)	100
7.	Repair, Maintenance and Strengthening of Reinforced Concrete Structures	(3+0)	100
8.	Analysis and Design of Bridges	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100	Thesis/Project	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
11.	Elective-III	3+0	100	Thesis/Project	6+0	200
12.	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

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 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.

7. GEOTECHNICAL AND HIGHWAY ENGINEERING

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 (Masters by Course) and Stream-II (Masters 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.

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.

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.

7.4 ACADEMIC STAFF

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

Professor & Program Coordinator:	**Assistant Professor:**
Dr. Aneel Kumar	**Mr. Arshad Ali Memon**
PhD, (Japan)	ME, (MUET, Pakistan)

Professor & Program Coordinator: **Dr. Naeem Aziz Memon** PhD, (UK)	**Mr. Samar Hussain Rizvi** ME, (NED, Pakistan)
Professor: **Dr. Rizwan Ali Memon** PhD, (MUET, Pakistan)	**Engr. Abdul Raqeeb Memon** ME, (MUET, Pakistan)
Dr. Agha Faisal Habib PhD, (UK)	**Dr. Muhammad Rehan Hakro** PhD, (MUET, Pakistan)
Dr. Zaheer Ahmed Almani PhD, (UK)	**Lecturer:** **Mr. Lal Chand Marwari** ME, (MUET, Pakistan) – ***On Study Leave***

7.5 LABORATORY FACILITIES

The Department of Civil Engineering is equipped with the required facilities, tools, and equipment to conduct experiments in Geotechnical and Highway Engineering.

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

1. Soil Mechanics Laboratory
2. Highway Engineering Laboratory
3. Engineering Geology Laboratory
4. Concrete Laboratory

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			
5.	Foundation Engineering and Design	(3+0)	100
6.	Pavement Design and Analysis	(3+0)	100
7.	Traffic Engineering	(3+0)	100
8.	Soil Dynamics and Earthquake Engineering	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100	Thesis	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
11.	Elective-III	2+0	50	Thesis	6+0	200
12.	Elective-IV	2+0	50			
13.	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

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.

8. ENERGY SYSTEMS ENGINEERING

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, MUET, Jamshoro is offering postgraduate programs in Energy Systems Engineering, offering ME and PhD degrees. These programs focus on teaching, research, and practical training to address energy challenges like efficient resource utilization and environmental protection. The curriculum of these programs attempts to equip the energy professionals to support organizations such as WAPDA, KESC, and Oil and Gas companies, 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.

8.2 PROGRAM MISSION

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

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.

8.4 ACADEMIC STAFF

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

Professor Emeritus: **Dr. Mohammad Aslam Uqaili** PhD, (UK)	**Dr. Imran Nazir Unar** PhD, (MUET, Pakistan)
Meritorious Professor: **Dr. Khanji Harijan** PhD, (MUET, Pakistan)	**Dr. Masroor Abro** PhD, (China)
Professor: **Dr. Rizwan Ahmed Memon** PhD, (Hong Kong)	**Assistant Professor:** **Dr. Mansoor Ahmed Soomro** PhD, (MUET, Pakistan)
Dr. Zubair Ahmed Memon PhD, (MUET, Pakistan)	**Dr. Zohaib Hussain Laghari** PhD, (Malaysia)
Dr. Abdul Fatah Abbasi PhD, (MUET, Pakistan)	**Dr. Shoaib Ahmed Khatri** PhD, (MUET, Pakistan)
Dr. Tanweer Hussain PhD, (UK)	**Dr. Laveet Kumar** PhD, (Malaysia)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	**Lecturer:** **Engr. Samiullah Qureshi** ME, (MUET, Pakistan)
Associate Professor: **Dr. Nayyar Hussain Mirjat** PhD, (MUET, Pakistan)	**Engr. Muhammad Waqas Chandio** ME, (MUET, Pakistan)
Dr. Faheem Ullah Shaikh PhD, (China)	**Engr. Intizar Ali Tunio** ME, (MUET, Pakistan)
Dr. Pervez Hameed Shaikh PhD, (Malaysia)	**Engr. Ans Ahmed Memon** ME, (MUET, Pakistan)
Dr. Mahesh Kumar Rathi PhD, (Malaysia)	**Engr. Waqas Ahmed** ME, (MUET, Pakistan)
Dr. Imran Nazir Unar PhD, (MUET, Pakistan)	

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 postgraduate programs of Energy Systems Engineering.

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

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			
5.	Renewable Energy Systems	(2+0)	50
6.	Research Methodology	(2+0)	50
7.	Energy Systems Modeling and Simulation	(2+0)	50
8.	Energy Systems for Buildings	(3+0)	100
9.	Energy Economics and Management	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
10.	Elective-I	(2+0)	50	Thesis	6+0	200
11.	Elective-II	(2+0)	50			
12.	Elective-III	(2+0)	50			
Fourth Semester						
13.	Elective-IV	(2+0)	50	Thesis	6+0	200
14.	Elective-V	(2+0)	50			
15.	Elective-VI	(2+0)	50			

The following is a list of elective courses:

ELECTIVE COURSES			
Sr. No.	**Subjects (2 CH, 50 Marks)**	**Sr. No.**	**Subjects (2 CH, 50 Marks)**
3rd Semester		**4th Semester**	
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

8.7 CAREER OPPORTUNITIES

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

9. INDUSTRIAL ENGINEERING AND MANAGEMENT

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.

9.2 PROGRAM MISSION

The mission of the M.E 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.

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.

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 Professor:** **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 Professor: **Dr. Shakeel Ahmed Shaikh** 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)	

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
2. Operations Research Laboratory
3. Computer Aided Engineering and Simulation Lab.
4. Vicon Motion Capture System Lab.
5. Additive Manufacturing Laboratory
6. Condition Monitoring Laboratory
7. Human Factors, Time & Motion Study Lab.
8. Computer Integrated Manufacturing Lab.

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			
5.	Research Design and Techniques	(3+0)	100
6.	Additive Manufacturing	(3+0)	100
7.	Global Entrepreneurship	(3+0)	100
8.	Supply Chain System Design	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS 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						
4.	Elective-IV	2+0	50	Thesis	6+0	200
5.	Elective-V	2+0	50			
6.	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

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, 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.

10. MANUFACTURING ENGINEERING

10.1 INTRODUCTION

The postgraduate course 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.

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.

10.3 PROGRAM OBJECTIVES

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

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

10.4 ACADEMIC STAFF

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

Professor & Chairman: **Dr. Abdul Fatah Abbasi** PhD, (MUET, Pakistan)	**Associate Professor:** **Dr. Shakeel Ahmed Shaikh** PhD, (Korea)
Professor: **Dr. Khanji Harijan** PhD, (MUET, Pakistan)	**Assistant Professor:** **Engr. Muhammad Atif Khan Qaim Khani** ME, (NED, Pakistan)
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 Phulpoto PhD (UK)	**Dr. Saifullah Samo** PhD, (China)
Dr. Abdul Ghafoor Memon PhD, (MUET, Pakistan)	**Dr. Saad Memon** PhD, (Korea)

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

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			
6.	Total Quality Management	3+0	100
7.	Reliability-centered Maintenance	3+0	100
8.	Design for Manufacturing and Assembly	3+0	100
9.	Sustainable & Green Manufacturing	3+0	100

The following are elective courses:

ELECTIVE COURSES-I			
Sr. No.	**Name of Subject**	**Credit Hours.**	**Marks**
1.	Metrology & Precision Engineering	3+0	100
2.	Modeling & Simulation	3+0	100
3.	Product Life Cycle Management	3+0	100
4.	Industrial Ergonomics	3+0	100
5.	Manufacturing Systems Design	3+0	100
6.	Supply Chain Management	3+0	100
7.	Leadership and Entrepreneurship	3+0	100
8.	Nanomaterial Technology	3+0	100

ELECTIVE COURSES-II			
Sr. No.	**Name of Subject**	**Credit Hours**	**Marks**
1.	Project Management	3+0	100
2.	Occupational Health & Safety	3+0	100
3.	Lean & Agile Manufacturing	3+0	100
4.	Operation Research	3+0	100
5.	Additive Manufacturing	3+0	100
6.	Reverse Engineering	3+0	100
7.	Engineering Economics	3+0	100
8.	AI-Driven Manufacturing Systems	3+0	100

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 firms.

11. MINING ENGINEERING

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.

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.

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.

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 Professor: **Engr. Safiullah Memon** ME (MUET, Pakistan)	**Dr. Muhammad Raheel Bawani** PhD (Turkey)
Dr. Munawar Ali Pinjaro PhD (China)	**Lecturer:** **Engr. Muhammad Burhan Memon** ME (Malaysia) - ***On Study Leave***
Engr. Shafi Muhammad Musab Ahmed ME (MUET, Pakistan)	**Engr. Saleem Raza Baloch** ME (MUET, Pakistan)

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

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			
6.	Open Pit Production Planning	3 + 0	100
7.	Coal Preparation	2 + 0	50
8.	Mine Heath Safety and Environment	2 + 0	50
9.	Rock Slope Engineering	2 + 0	50

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS 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						
3.	Elective-IV	03	100	Thesis	6+0	200
4.	Elective-II	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

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.


12. CHEMICAL ENGINEERING

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.

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.

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.

12.4 ACADEMIC STAFF

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

Professor & Chairperson: **Dr. Khadija Qureshi** PhD, (MUET, Pakistan)	**Dr. Zulfiqar Ali Bhatti** PhD, (MUET, Pakistan)
Professor: **Dr. Inamullah Bhatti** PhD, (Malaysia)	**Dr. Masroor Ahmed Abro** PhD, (China)
Dr. Abdul Rehman Memon PhD, (UK)	**Assistant Professor:** **Dr. Khan Muhammad Qureshi** PhD, (Malaysia)

Dr. Zeenat M. Ali PhD, (MUET, Pakistan)	**Dr. Sikandar Mustafa Almani** PhD, (France)
Dr. Aziza Aftab PhD, (MUET, Pakistan)	**Engr. Aisha Kousar Abro** ME, (MUET, Pakistan)
Associate Professor: **Dr. M. Shuaib Shaikh** PhD, (Malaysia)	**Dr. Zulfiqar Ali Solangi** PhD, (MUET, Pakistan)
Dr. Imran Nazir Unar PhD, (MUET, Pakistan)	

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

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			
6.	Process Simulation & Modeling	(3+0)	100
7.	Advanced Analytical Techniques and Research Methodology	(3+0)	100
8.	Industrial Waste Management	(3+0)	100
9.	Artificial Intelligence in Chemical Engineering	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I (Select one course of 3 C.H from the list)	(3+0)	100	Thesis	6+0	200
10.	Elective-II (Select one course of 3 C.H from the list)	(3+0)	100			

Fourth Semester						
12.	Elective-I (Select one course of 3 C.H from the list)	(3+0)	100	Thesis	6+0	200
13.	Elective-II (Select one course of 3 C.H from the list)	(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

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.


13. METALLURGY AND MATERIALS ENGINEERING

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.

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.

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.

13.4 ACADEMIC STAFF

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

Professor & Chairman: **Dr. Muhammad Ishaque Abro** PhD, (MUET, Pakistan)	**Dr. Imtiaz Ali Soomro** PhD, (Malaysia)
Assistant Professor: **Dr. Umair Aftab** PhD, (MUET, Pakistan)	**Engr. Ayatullah Qureshi** ME, (MUET, Pakistan)
Dr. M. Wasim Akhtar PhD, (South Korea)	**Lecturer:** **Engr. Mukesh Kumar** ME, (MUET, Pakistan)
Dr. Muddassir Ali Memon PhD, (MUET, Pakistan)	

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

13.6 COURSES OFFERED

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Mechanical Behavior of Materials ***(MME-611)***	(3+0)	(100+0)
2.	Materials Characterization Techniques ***(MME-612)***	(3+0)	(100+0)
3.	Advanced Manufacturing ***(MME-613)***	(3+0)	(100+0)
4.	Materials Thermodynamics ***(MME-614)***	(3+0)	(100+0)
Second Semester			
5.	Phase Transformations ***(MME-615)***	(3+0)	(100+0)
6.	Computational Materials Engineering ***(MME-616)***	(3+0)	(100+0)
7.	Research Methodology ***(MME-617)***	(3+0)	(100+0)
8.	Design and Selection of Materials ***(MME-618)***	(3+0)	(100+0)

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100+00	Thesis	6+0	200
10.	Elective-II	3+0	100+00			
Fourth Semester						

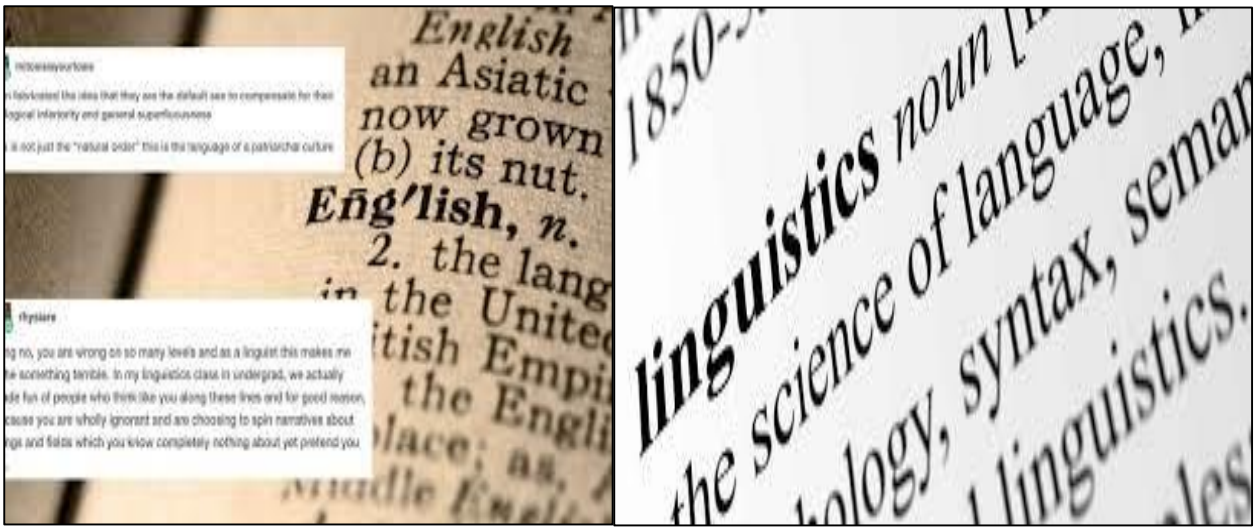
11.	Elective-III	3+0	100+00	Thesis	6+0	200
12.	Elective-IV	3+0	100+00			

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
Third Semester			
1.	Corrosion and Protection Techniques ***(MME-711)***	03+00	100+00
2.	Thin film and Surface Engineering ***(MME-712)***	03+00	100+00
3.	Additive Manufacturing ***(MME-713)***	03+00	100+00
4.	Synthesis and Design of Nanomaterials ***(MME-714)***	03+00	100+00
5.	Advanced Composite Materials ***(MME-715)***	03+00	100+00
6.	Advances in Ferrous and Nonferrous Alloys ***(MME-716)***	03+00	100+00
Fourth Semester			
7.	Advance Biomaterials ***(MME-717)***	03+00	100+00
8.	Advanced Energy Materials ***(MME-718)***	03+00	100+00
9.	Polyemer ans Processes ***(MME-719)***	03+00	100+00
10.	Ceramics and processes ***(MME-720)***	03+00	100+00
11.	Construction Materials ***(MME-721)***	03+00	100+00
12.	High Temperature Materials ***(MME-722)***	03+00	100+00

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 services.



14. ENGLISH LINGUISTICS

14.1 INTRODUCTION

This program's aim is 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 finding 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 Higher Education Commission of Pakistan with intent to produce prospective leadership and knowledge building among our students.

14.2 PROGRAM MISSION

The Centre of English Language and Linguistics (CELL) is committed to prepare qualified human resource 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.

14.3 PROGRAM OBJECTIVES

The MS English (Linguistics) program is one and half years (3 semesters) taught and research program which covers the contemporary concerns of English Language Teaching and Applied Linguistics at all educational levels. The focus of this program is how ELT theory relates to classroom practice. The potential postgraduate students are expected to develop their understanding on linguistic research. This program is in lines 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.

14.4 ACADEMIC STAFF

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

Assistant Professor and Director: **Dr. Sahiba Khatoon Thaheem** PhD, (Malaysia)	**Ms. Shazia Muheodin** MS, (MUET, Pakistan)
Professor: **Dr. Habibullah Pathan** PhD, (UK), Post Doc., (USA) - ***On Lien***	**Mr. Ali Raza Khoso** MS, (MUET, Pakistan)
Associate Professor: **Dr. Shumaila Memon** PhD, (UK), Post Doc., (USA) - ***On Lien***	**Mr. Shamshad Junejo** MS, (MUET, Pakistan)
Visiting Faculty: **Ms. Rosy Ilyas** Retd. Assistant Professor	**Mr. Shamshad Junejo** MS, (MUET, Pakistan)
Assistant Professor: **Ms. Quratulain Mirza** PhD Scholar, (UoS, Pakistan)	**Mr. Mansoor Ahmed Memon** MS, (MUET, Pakistan)
Mr. Shoukat Ali Lohar PhD Scholar, (UoS, Pakistan)	**Ms. Nazia Koonj** MS, (MUET, Pakistan)
Ms. Sadia Inayat MS Scholar, (MUET, Pakistan)	**Mr. Fayaz Ali Chandio** MS, (MUET, Pakistan)
Ms. Sania Sachal MS Scholar, (MUET, Pakistan) - ***On Study Leave***	**Mr. Abdul Wahid Bhatti** MS, (MUET, Pakistan)
Lecturer: **Mr. Jam Khan Muhammad** PhD Scholar, (UoS, Pakistan)	**Ms. Tehmina Kalwar** MS, (MUET, Pakistan)
Mr. Waqar Ali Shah Doctoral Researcher (Finland) - ***On Study Leave***	**Ms. Qirat Buledi** MS, (MUET, Pakistan)
Mr. Farwa Thalho M.Phil., (UoS, Pakistan)	

14.5 LABORATORY FACILITIES

The Centre of English Language and Linguistics (CELL) is equipped with the required facilities, tools and equipment to conduct experiments in 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

14.6 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			
6.	Research Methodology in Applied Linguistics	(3+0)	100
7.	Data Handling and Analysis	(3+0)	100
8.	Digital Humanities	(3+0)	100
9.	Advance Language Testing and Evaluation	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	2+0	50	Thesis	6+0	00
10.	Elective-II	2+0	50			
11.	Elective-III	2+0	50			
Fourth Semester						
12.	Elective-IV	3+0	100	Thesis	6+0	00
13.	Elective-V	3+0	100			
14	Elective-VI	3+0	100			

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
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
4.	Language Teacher Education and Development	3+0	100
5.	Pedagogical Grammar	3+0	100
6.	Cross-Cultural Communication	3+0	100

14.7 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.


15. TEXTILE ENGINEERING

15.1 INTRODUCTION

The Department of Textile Engineering at Mehran University of Engineering and Technology (MUET) was established in 1993 and the M.E 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.

15.2 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.

15.3 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.

15.4 ACADEMIC STAFF

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

Professor & Chairperson: Prof. Dr. Zeeshan Khatri PhD, (Japan)	**Assistant Professor:** **Dr. Sanam Irum Memon** PhD, (MUET, Pakistan)
Professor: Prof. Dr. Farooq Ahmed PhD, (MUET, Pakistan)	**Dr. Abdul Wahab Memon** PhD, (Belgium)
Associate Professor: **Dr. Mazhar Hussain Peerzada** PhD, (UK) - ***On Leave***	**Dr. Anam Ali Memon** PhD, (South Korea)
Dr. Awais Khatri PhD, (Australia)	**Dr. Rabia Almas** PhD, (MUET, Pakistan)
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)	**Lecturer:** **Dr. Sadaf Aftab Abbasi** PhD, (Australia)
Dr. Noor Ahmed Sanbhal PhD, (China)	**Engr. Abdul Khalique** ME, (MUET, Pakistan)
Dr. Raja Fahad Qureshi PhD, (MUET, Pakistan)	

15.5 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
2. Fabric Manufacturing Laboratory
3. Knitting Laboratory
4. Textile Chemical Processing Laboratory
5. Textile Testing and Quality Control
6. Garment Manufacturing Laboratory
7. Computer Laboratory
8. Color Research Laboratory
9. Nanomaterials Research Laboratory
10. Functional Materials and Polymer Engineering Laboratory
11. Smart and Energy Textile Materials

15.6 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			

6.	Advanced Textile Coloration and Finishing	(3+0)	100
7.	Technical Textiles	(3+0)	100
8.	Automation and Textile Process Control	(3+0)	100
9.	Nonwoven Engineering	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100	Thesis	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
12.	Elective-III	3+0	100	Thesis	6+0	200
13.	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
Fourth Semester			
4.	Modeling and Simulation	(3+0)	100
5.	Lean Manufacturing	(3+0)	100
6.	Sustainable Methods and Manufacturing	(3+0)	100

15.7 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.

(B). PH.D DEGREE PROGRAMS:

2. INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

(A). MASTER DEGREE PROGRAMS:

The Institute of Information and Communication Technologies currently offers following Master's Degree Programs in:

1. Computer and Information Engineering	7. Software Engineering
2. Electrical Power Engineering	8. Information Technology
3. Electronic Systems Engineering	9. Data Science
4. Industrial Automation and Control	10. Cyber Security
5. Mechatronics Engineering	11. Communication Systems and Networks
6. Biomedical Engineering	

1. COMPUTER AND INFORMATION ENGINEERING

1.1 PROGRAM MISSION

The mission of the program is to provide quality education towards the latest trends in the field of Computer Engineering, 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.

1.2 PROGRAM OBJECTIVES

The objectives of the ME in Computer and Information Engineering (CIE) degree program are:

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.

1.3 ACADEMIC STAFF

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

Professor Emeritus: **Dr. Abdul Qadeer Khan Rajput** PhD, (USA)	**Dr. Bushra Naz** PhD, (China)
Chairman & Associate Professor: **Dr. Shahnawaz Talpur** PhD, (China)	**Assistant Professor:** **Dr. Zartasha Baloch** PhD, (MUET, Pakistan)
Associate Professor: **Dr. Sanam Narejo** PhD, (Italy)	**Engr. Rizwan Badar** ME, (MUET, Pakistan)
Dr. Sammer Zai PhD, (South Korea)	**Dr. Irfan Bhacho** PhD, (South Korea)
Dr. Muhammad Ahsan PhD, (South Korea)	**Lecturer:** **Dr. Fawad Mangi** PhD, (Australia)

1.4 LABORATORY FACILITIES

The department of Computer System Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of **Computer and Information Engineering.**

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

1. Communication Laboratory
2. Microprocessor Laboratory
3. Advance SW Engineering Laboratory
4. Multimedia and Visual Designer Studio Lab.
5. Computing Laboratory 1
6. Computing Laboratory 2
7. Software Engineering Laboratory
8. Data Management and Internet Lab.

1.5 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
Second Semester			
5.	Applied Artificial Intelligence	3 – 0	100 – 00
6.	Advanced Operating Systems	3 – 0	100 – 00
7.	Advanced Computer Systems Architecture	3 – 0	100 – 00
8.	Data Mining	3 – 0	100 – 00

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100	Thesis/Project	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
12.	Elective-III	3+0	100	Thesis/Project	6+0	200
13.	Elective-IV	3+0	100			

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
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

1.6 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.

2. ELECTRICAL POWER ENGINEERING

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 Power 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.

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.

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.

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. Mahesh Kumar** PhD, (Malaysia)
Professor & Dean, FEECE: **Dr. Ashfaque Ahmed Hashmani** PhD, (Germany)	**Dr. Abdul Hakeem Memon** PhD, (China)
Professor: **Dr. Zubair Ahmed Memon** PhD, (MUET, Pakistan)	**Dr. Pervez Hameed Shaikh** PhD, (Malaysia)
Professor & Dean, FOSTH: **Dr. Abdul Sattar Larik** PhD, (MUET, Pakistan)	**Assistant Professor:** **Engr. Muhammad Rashid Memon** ME, (MUET, Pakistan)
Professor: **Dr. Mukhtiar Ahmed Mahar** PhD, (MUET, Pakistan)	**Dr. Mansoor Ahmed Soomro** PhD, (MUET, Pakistan)
Dr. Ali Asghar Memon PhD, (UK)	**Engr. Abdul Jabbar Memon** ME, (MUET, Pakistan)
Associate Professor: **Dr. Amir Mahmood Soomro** PhD, (China)	**Dr. Shoaib Ahmed Khatri** PhD, (MUET, Pakistan)
Dr. Anwar Ali Sahito PhD, (MUET, Pakistan)	**Engr. Shafi Muhammad Jiskani** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Nayyar Hussain Mirjat PhD, (MUET, Pakistan)	**Dr. Zuhaib Hussain Leghari** PhD, (Malaysia)
Dr. Faheemullah Shaikh PhD, (China)	

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

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			
7.	Power Electronics (ELP-621)	(2+0)	50
8.	Power System Stability (ELP-622)	(2+0)	50
9.	Advanced High Voltage Engineering (ELP-623)	(2+0)	50
10.	Energy Management (ELP-624)	(2+0)	50
11.	Power System Protection (ELP-625)	(2+0)	50
12.	Electrical Power Distribution Systems (ELP-626)	(2+0)	50

STREAM-I (MASTERS BY COURSE)				**STREAM-II (MASTERS BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
13.	FACTS and HVDC	3+0	100	Thesis	6+0	200
14.	Elective Course-I	3+0	100			
Fourth Semester						
15.	Solid State Drives	3+0	100	Thesis	6+0	200
16.	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
3.	Power System Modeling and Simulation (ELP-642)	(3+0)	100
4.	Renewable Energy Integration and Optimization (ELP-643)	(3+0)	100

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.

3. ELECTRONIC SYSTEMS ENGINEERING

3.1 OBJECTIVES

In today's complex world, electronics, computers and communications permeate every facet of our lives and will do even more so in the future. This growth can provide 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 Institute of Information and Communication Technologies.

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

3.2 PROGRAM MISSION

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

3.3 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.

3.4 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. Zaigham Abbas Shah** PhD, (USA)
Professor & Director, IICT: **Dr. Arbab Nighat Kalhoro** PhD, (China)	**Dr. Shoaib Rehman Soomro** PhD, (Turkey), Post Doc., (Spain)
Professor: **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 Professor: **Dr. Tayab Din Memon** PhD, (Australia) - ***On Lien***	**Dr. Saba Baloch** PhD, (Malaysia)
Dr. Irfan Ahmed Halepoto PhD, (MUET, Pakistan)	**Engr. Bushra Abro** ME, (MUET, Pakistan)
Assistant Professor: **Engr. Tufail Waseer** ME, (MUET, Pakistan)	**Lecturer:** **Engr. Qurban Ali Memon** ME, (MUET, Pakistan)
Dr. Khalil-Ur-Rehman Dayo PhD, (MUET, Pakistan)	**Engr. Bharat Lal** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Kehkashan Asma PhD, (MUET, Pakistan)	**Engr. Komal Memon** ME, (MUET, Pakistan) - ***On Study Leave***
Engr. Kamran Kazi ME, (MUET, Pakistan)	**Engr. Qudsia Memon** ME, (MUET, Pakistan)

3.5 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
2. Analog Electronics Laboratory
3. Digital System Design Laboratory
4. Embedded System Laboratory
5. Modeling and Simulation Laboratory
6. Communication System Laboratory
7. Project Laboratory I & II
8. Computing Laboratory
9. Research Laboratory
10. Power Electronics & Circuit Design Lab.

3.6 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			
5.	Power Electronics and Drives	(3+0)	100-0
6.	Microelectronics	(3+0)	100-0
7.	Communication Systems and Technologies	(3+0)	100-0
8.	Advanced Digital System Design	(3+0)	100-0

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-(I/II/III) (I/II/III)	6+0	200	Thesis	6+0	200
Fourth Semester						
10.	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

3.7 CAREER OPPORTUNITIES

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

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

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

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

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

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

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

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

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

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

10. **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.

4. INDUSTRIAL AUTOMATION AND CONTROL

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.

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.

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.

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. Zaigham Abbas Shah** PhD, (USA)
Professor & Director, IICT: **Dr. Arbab Nighat Kalhoro** PhD, (China)	**Dr. Shoaib Rehman Soomro** PhD, (Turkey), Post Doc., (Spain)
Professor: **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 Professor: **Dr. Tayab Din Memon** PhD, (Australia) - ***On Lien***	**Dr. Saba Baloch** PhD, (Malaysia)
Dr. Irfan Ahmed Halepoto PhD, (MUET, Pakistan)	**Engr. Bushra Abro** ME, (MUET, Pakistan)
Assistant Professor: **Engr. Tufail Waseer** ME, (MUET, Pakistan)	**Lecturer:** **Engr. Qurban Ali Memon** ME, (MUET, Pakistan)
Dr. Khalil-Ur-Rehman Dayo PhD, (MUET, Pakistan)	**Engr. Bharat Lal** ME, (MUET, Pakistan) - ***On Study Leave***
Dr. Kehkashan Asma PhD, (MUET, Pakistan)	**Engr. Komal Memon** ME, (MUET, Pakistan) - ***On Study Leave***
Engr. Kamran Kazi ME, (MUET, Pakistan)	**Engr. Qudsia Memon** ME, (MUET, Pakistan)

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

4.6 COURSES OFFERED

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			
5.	Advanced Control Systems	(3+0)	100-0
6.	Industrial Process Control Systems	(3+0)	100-0
7.	Machine Learning for Industrial Automation	(3+0)	100-0
8.	Advanced Embedded Systems	(3+0)	100-0

STREAM-I (MASTERS BY COURSE)				**STREAM-II (MASTERS BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-(I/II/III) (I/II/III)	6+0	200	Thesis	6+0	200
Fourth Semester						
10.	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

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. MECHATRONICS ENGINEERING

5.1 INTRODUCTION

Mechatronics is the synergistic integration of Mechanical, Electronic, Control and Computer Engineering. Mechatronic Engineering is one of the rapidly growing fields of Engineering. The demand for mechatronic products and systems, and hence qualified Mechatronic engineers, is ever increasing worldwide. The increased automation and control in various setups is supported by smart sensors, actuators, microprocessors, microcontrollers and computer aided design tools. The engineers involved with those systems must possess thorough understanding of various elements of the system. The research and development activities in the domain of Mechatronics are also increasing due to introduction of new sensors, actuators and control systems.

Modern industrial systems have changed from pure mechanical or electromechanical to fully automatic and computerized ones. Hence, knowledge spanning over various disciplines is required for proper understanding and working in those scenarios. Therefore, the need for education in Mechatronics is growing since many products and systems are integration of mechanical and electronic components. Examples include, but are not limited to, manufacturing industry, automotive systems, consumer appliances and robots. The syllabus of Master of Engineering in Mechatronics program has been carefully designed by keeping interdisciplinary nature in mind. The ME Mechatronics program is offered under both course and Course & Research streams.

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

5.3 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.

5.4 ACADEMIC STAFF

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

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

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
2. Instrumentation and Control Lab.
3. Computer Lab.
4. Industrial Automation & Robotics Lab
5. Modeling & Simulation Lab

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			
5.	Image Processing for Intelligent Systems	3+0	100
6.	Advanced Embedded Systems	3+0	100
7.	Industrial Control Technology	3+0	100
8.	Machine Learning	3+0	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS 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						
3.	Elective-III	3+0	100	Thesis	6+0	200
4.	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.	Cognitive Robotics	3+0	100
3.	Digital Control Systems	3+0	100
4.	Machine Vision	3+0	100

5.7 CAREER OPPORTUNITIES

Mechatronic Engineers have opportunities to work in both industrial and research sectors. Modern industry has transformed from electromechanical type to fully automated type; thus, Mechatronic engineering skills are in demand by both national and international companies. Plenty of opportunities also exist for postgraduate studies/scholarships nationally and internationally.

6. BIOMEDICAL ENGINEERING

6.1 INTRODUCTION

Mehran University of Engineering and Technology has the privilege of establishing the Biomedical Engineering Department for the first time in the history of all public sector universities in Pakistan. Technological innovation in the field of medicine and healthcare is advancing at an enormous pace, with modern hospitals now serving as the centers of technologically sophisticated healthcare systems. Given the tremendous growth of the Biomedical Sector and Tele-Medicine in the country, there is a significant scope and need for Biomedical Engineers, Experts, and Solution Providers.

Biomedical engineering utilizes engineering principles to understand, modify, or control biological systems. In practice, it encompasses everything from diagnostic and patient monitoring equipment to implants such as pacemakers, artificial joints, and limbs, as well as computer simulations of biological functions.

All these modern healthcare aids need to be conceived, designed, tested, manufactured, installed, operated, maintained, and improved – a responsibility undertaken by Biomedical Engineers. The global market for all biomedical devices, including diagnostic and therapeutic equipment, is estimated to be around $100 billion/year and is poised to grow further, particularly in areas with aging populations. The role of Biomedical Engineers will be increasingly vital in this growth. This field is interdisciplinary and applied, involving electronic engineering, materials, and mechanical engineering, and requires a working knowledge of physiology, human anatomy, and biological sciences. The department offers a Master of Engineering degree in Biomedical Engineering.

6.2 PROGRAM MISSION

This program fosters expertise in product development, bioinstrumentation, robotics, and imaging. Emphasizing the integration of engineering and life sciences, it addresses complex challenges through research and education in bioinstrumentation, biomaterials, biomechanics, neural engineering, and rehabilitation, empowering professionals to innovate and impact healthcare technologies and systems

6.3 PROGRAM OBJECTIVES

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

i). **Foster Expertise**: Enable individuals with degrees in biomedical engineering and related fields to develop advanced skills in product development, robotics, imaging, and bioinstrumentation.
ii). **Promote Research**: Provide opportunities to conduct impactful research in bioinstrumentation, biomaterials, tissue engineering, biomechanics, neural engineering, and rehabilitation engineering.
iii). **Encourage Interdisciplinary Integration**: Emphasize the integration of engineering principles and life sciences to address complex healthcare challenges.
iv). **Advance Knowledge**: Offer comprehensive courses in cutting-edge areas of biomedical engineering to expand understanding and application of the field.
v). **Support Innovation**: Prepare professionals to drive innovation and contribute to advancements in medical technologies and healthcare solutions.

6.4 ACADEMIC STAFF

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

Associate Professor and Chairman: **Dr. Abdul Qadir Ansari** PhD, (MUET, Pakistan)	**Dr. Abdul Raheem Ansari** PhD, (Korea)
Professor: **Dr. Ahsan Ahmed Ursani** PhD, (France)	**Dr. Maheen Surahio** PhD, (China)
Associate Professor: **Dr. Syed Amjad Ali** PhD, (China)	**Engr. Rabia Chandio** ME, (MUET, Pakistan)
Dr. Muhammad Amir Panhwar PhD, (China)	**Lecturer:** **Engr. Salman Afridi** ME, (MUET, Pakistan)
Assistant Professor: **Engr. N.P. Chowdhry** M.Sc., (UK)	**Engr. Kandeel Fatima** ME, (MUET, Pakistan)

6.5 LABORATORY FACILITIES

The department of Biomedical Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of Bioinstrumentation, Biomaterials, Biomechanics, Neural Engineering, Signal Processing and Rehabilitation.

The following laboratories are available at the Department of Biomedical Engineering:

1. Biomedical Computing Lab
2. Biomedical Sciences Lab
3. Biomedical Engineering Lab
4. Biomedical Instrumentation Lab
5. Telemedicine and Research Lab
6. Nano medicine Research Laboratory

6.6 COURSES OFFERED

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Medical Image Processing	(3+0)	100
2.	Medical Instrumentation	(2+0)	50
3.	Statistics in Medicine	(2+0)	50
4.	Advanced Digital Signal Processing	(3+0)	100
5.	Ultrasonic Instrumentation and Imaging	(2+0)	50
Second Semester			

6.	Advanced Imaging Techniques	(3+0)	100
7.	Research Methodology	(3+0)	100
8.	Radiography and Computed Tomography	(3+1)	100
9.	Simulation of Dynamic Systems	(0+1) Pr	50
10.	Laser and Spectroscopy	(2+0)	50

STREAM-I (MASTERS BY COURSE)				**STREAM-II (MASTERS BY RESEARCH)**		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
11.	Ultrasound and Photo acoustic beamforming	2+0	50	Thesis	6+0	200
12.	Internet of Medical Things	2+0	50			
13.	Operations Research	2+0	50			
Fourth Semester						
14.	Machine Learning for Signal Processing	3+0	100	Thesis	6+0	200
15.	Elective-I	3+0	100			

The following is a list of elective courses:

Sr. No.	**Subjects**	**Credit Hours**	**Marks**
1.	Microfluidics and Organs on Chip	(3+0)	100
2.	Molecular Imaging and Diagnostics	(3+0)	100
3.	Operations Research	(3+1)	100
4.	Functional and Multimodal Imaging	(3+0)	100
5.	Biomedical Signal Processing	(3+0)	100
6.	Bioelectronics Instrumentation	(3+0)	100
7.	Sensors and Actuators in Biomedicine	(3+0)	100
8.	Optical Imaging and Microscopy	(3+0)	100
9.	Photonics	(3+0)	100

6.7 CAREER OPPORTUNITIES

Graduates of this program in biomedical engineering are equipped for diverse and rewarding career opportunities in the rapidly growing field of biomedical engineering. They can contribute to product development by designing and improving medical devices, prosthetics, and diagnostic equipment. Career paths in bioinstrumentation involve developing cutting-edge tools for monitoring and treating medical conditions.

With expertise in robotics and imaging, professionals can work in advanced fields like surgical robotics or medical imaging systems. The program's emphasis on biomaterials and tissue engineering opens doors to careers in regenerative medicine, developing artificial organs, or biomaterial-based therapies.

Graduates can also explore roles in biomechanics, focusing on human movement and the development of orthopedic devices, or specialize in neural and rehabilitation engineering, working on technologies for neuro protectors and rehabilitation systems. These diverse opportunities span industries such as healthcare, research, academia, and the medical device sector, driving innovation and improving patient care.

7. SOFTWARE ENGINEERING

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 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 student are remained engaged in the internships to shine their skills and understand the market standards.

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.

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.

7.4 ACADEMIC STAFF

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

Professor & Chairperson: **Dr. Qasim Ali** PhD, (China)	**Dr. Areej Fatemah** PhD, (MUET, Pakistan)
Professor: **Dr. Sania Bhatti** PhD, (UK)	**Dr. S. M. Shehram Shah** PhD, (Australia)
Associate Professor: **Dr. Naeem Ahmed Mahoto** PhD, (Italy)	**Dr. Rabeea Jafferi** PhD, (Malaysia)
Dr. Mohsin Ali Memon PhD, (Japan)	**Ms. Shafia Qadeer Memon** ME, (MUET, Pakistan)
Dr. Isma Farah Siddiqui PhD, (South Korea)	**Ms. Memoona Sami** ME (MUET, Pakistan)
Assistant Professor: Mr. Salahuddin Sadar ME, (MUET, Pakistan)	**Mr. Junaid Ahmed** ME, (MUET, Pakistan)

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
2. Visual Informatics, Image Processing, 3D Modeling, Visualization Laboratory
3. Data Warehousing and Management Laboratory
4. Software Quality Assurance and Testing Laboratory
5. Software Research and Development Laboratory
6. Parallel Programming, Cluster Computing, Grid Research and Storage Management Laboratory

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			
5.	Software Testing and Quality Assurance	(3+0)	(100+0)
6.	Agile Software Development	(2+0)	(50+0)
7.	Advanced Formal Methods	(3+1)	(100+3)
8.	Data Mining Concepts & Techniques	(3+0)	(100+0)
9.	Software Engineering Lab - I	(0+1)	(0+50)
Third Semester			
10.	Software Security	(3+0)	(100+0)
11.	Elective-I	(2+0)	(50+0)
12.	Software Engineering Lab – II	(0+1)	(0+50)
Fourth Semester			
13.	Applied Data Science	(3+0)	(100+0)
14.	Elective-II	(2+0)	(50+0)
15.	Software Engineering Lab – III	(0+1)	(0+50)

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
15.	Elective-I	2+0	50	Thesis	6+0	200
16.	Elective-II	2+0	50			
17.	Elective-III	2+0	50			
Fourth Semester						
18.	Elective-IV	3+0	100	Thesis	6+0	200
19.	Elective-V	3+0	100			

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Marks
1.	SE703: Semantic-Based Software Engineering	(2+0)	
2.	SE704: Advanced Human-Computer Interaction	(2+0)	
3.	SE706: Component-Based Software Engineering	(2+0)	
4.	SE713: Reliability Software Engineering	(2+0)	
5.	SE714: Software Risk Management	(2+0)	
6.	SE716: Agent-Based Modeling	(2+0)	

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.

8. INFORMATION TECHNOLOGY

8.1 PROGRAM MISSION

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.

8.2 PROGRAM OBJECTIVES

The objectives of the ME in Information Technology (IT) degree program are:

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.

8.3 ACADEMIC STAFF

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

Professor Emeritus: **Dr. Abdul Qadeer Khan Rajput** PhD, (USA)	**Dr. Bushra Naz** PhD, (China)

Chairman & Associate Professor: **Dr. Shahnawaz Talpur** PhD, (China)	**Assistant Professor:** **Dr. Zartasha Baloch** PhD, (MUET, Pakistan)
Associate Professor: **Dr. Sanam Narejo** PhD, (Italy)	**Engr. Rizwan Badar** ME, (MUET, Pakistan)
Dr. Sammer Zai PhD, (South Korea)	**Dr. Irfan Bhacho** PhD, (South Korea)
Dr. Muhammad Ahsan PhD, (South Korea)	**Lecturer:** **Dr. Fawad Mangi** PhD, (Australia)

8.4 LABORATORY FACILITIES

The department of Computer System Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of **Information Technology.**

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

1. Communication Laboratory
2. Microprocessor Laboratory
3. Advance SW Engineering Laboratory
4. Multi Media and Visual Designer Studio Lab.
9. Computing Laboratory 1
10. Computing Laboratory 2
11. Software Engineering Laboratory
12. Data Management and Internet Laboratory

8.5 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			
5.	Algorithm Analysis	3 – 0	100 – 00
6.	Mobile Application Development	3 – 0	100 – 00
7.	Business Intelligence	3 – 0	100 – 00
8.	Web Technologies	3 – 0	100 – 00

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100	Thesis/Project	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
12.	Elective-III	3+0	100	Thesis/Project	6+0	200
13.	Elective-IV	3+0	100			

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

8.6 CAREER OPPORTUNITIES

The program has interdisciplinary and flexible study opportunities of a high standard and quality. The program provides the framework within which students can appreciate and integrate new software and hardware technologies and extend their theoretical knowledge in specific areas of interest in the industry. By learning the engineering principles behind information technology and the business context in which IT decisions are made, ME in IT graduates are prepared to implement better IT solutions that reflect the demands of today's evolving marketplace.

9. DATA SCIENCE

9.1 PROGRAM MISSION

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.

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.

9.2 PROGRAM OBJECTIVES

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.

9.3 ACADEMIC STAFF

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

Professor Emeritus: **Dr. Abdul Qadeer Khan Rajput** PhD, (USA)	**Dr. Bushra Naz** PhD, (China)
Chairman & Associate Professor: **Dr. Shahnawaz Talpur** PhD, (China)	**Assistant Professor:** **Dr. Zartasha Baloch** PhD, (MUET, Pakistan)
Associate Professor: **Dr. Sanam Narejo** PhD, (Italy)	**Engr. Rizwan Badar** ME, (MUET, Pakistan)

Associate Professor: **Dr. Sammer Zai** PhD, (South Korea)	**Dr. Irfan Bhacho** PhD, (South Korea)
Dr. Muhammad Ahsan PhD, (South Korea)	**Lecturer:** **Dr. Fawad Mangi** PhD, (Australia)

9.4 LABORATORY FACILITIES

The department of Computer System Engineering is equipped with the required facilities, tools and equipment to conduct experiments in field of **Data Science.**

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

1. Communication Laboratory
2. Microprocessor Laboratory
3. Advance SW Engineering Laboratory
4. Multi Media and Visual Designer Studio Lab.
5. Computing Laboratory 1
6. Computing Laboratory 2
7. Software Engineering Laboratory
8. Data Management and Internet Laboratory

9.5 COURSES OFFERED

List of Deficiency Courses for Non-IT Candidates

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Programming Fundamentals	2 – 0	50 -00
2.	Design and Analysis of Algorithms	2 – 0	50 -00
3.	Database Systems	2 – 0	50 - 00

The list of courses offered for a master's in data science is as follows:

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			
5.	Machine Learning	2 – 1	50 – 50
6.	Big Data Analytics	3 – 0	100 – 00
7.	Data Mining	3 – 0	100 – 00
8.	Cloud Computing	3 – 0	100 – 00

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

9.	Elective-I	3+0	100	Thesis/Project	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
12.	Elective-III	3+0	100	Thesis/Project	6+0	200
13.	Elective-IV	3+0	100			

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

9.6 CAREER OPPORTUNITIES

The Master's in Data Science program unlocks a world of opportunities in one of the fastest-growing fields of the digital age. It equips students with skills in data analysis, machine learning, and big data technologies, preparing them for high-demand roles such as data scientists, AI specialists, and business intelligence analysts. Graduates can excel in diverse industries like healthcare, finance, retail, and technology or pursue entrepreneurial ventures. With a focus on ethical practices, innovation, and hands-on learning, this program empowers you to solve real-world problems, drive impactful decisions, and shape the future in a data-driven world.

10. CYBER SECURITY

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.

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.

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.

10.4 ACADEMIC STAFF

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

Meritorious Professor & Chairperson: **Dr. Aftab Ahmed Memon** PhD, (Japan)	**Dr. Umair Ahmed Korai** PhD, (UK)
Professor: **Dr. Abdul Waheed Umrani** PhD, (Singapore)	**Dr. Zulfiqar Ali Arain** PhD, (China)
Dr. Faisal Karim Shaikh PhD, (Germany)	**Engr. Nafeesa Bohra** ME, (MUET, Pakistan)
Associate Professor: **Dr. Fahim Aziz Umrani** PhD, (UK)	**Engr. Naeem Aijaz Yousfani** ME, (MUET, Pakistan)
Dr. Abdul Latif Memon PhD, (China)	**Engr. Syed Mohsin Ali Shah** ME, (MUET, Pakistan)
Dr. Imran Ali Qureshi PhD, (China)	**Engr. Shanzah Mohsin** ME, (MUET, Pakistan)
Dr. Faheem Yar Khuhawar Ph.D. (Italy)	**Engr. Riaz Ahmed Soomro** ME, (MUET, Pakistan)
Dr. Sajjad Ali Memon PhD, (China)	**Engr. Saima Hafeez** ME, (MUET, Pakistan) – ***On Study Leave***
Dr. Nasrullah Pirzada PhD, (Malaysia)	**Engr. Shakeel A. Laghari** ME, (MUET, Pakistan)
Dr. Badar Munir PhD, (China) – ***On Leave***	**Engr. Mehran M. Memon** ME, (MUET, Pakistan)
Dr. Zafi Shehran Shah PhD, (UK)	**Engr. Hyder Bux Mangrio** ME, (MUET, Pakistan)
Assistant Professor: **Dr. Faisal Ahmed Memon** PhD, (Italy) – ***On Leave***	**Engr. Syed Rizwan Ali Shah** ME, (MUET, Pakistan)
Dr. Abi Waqas Memon PhD, (Italy)	**Engr. Saadullah Kalwar** ME, (MUET, Pakistan) – ***On Study Leave***

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.
2. Project Laboratory
3. Transmission and Switching Laboratory
4. Networking and Protocol Design Lab.
5. Optical Communication & Photonics Lab.
6. PC Laboratory-I
7. Cyber Security Laboratory
8. Cellular Communications Laboratory
9. Advanced Computing Laboratory
10. Digital Signal Processing Laboratory
11. Radio Communication Laboratory
12. Internet of Things (IoT) Laboratory

10.6 COURSES OFFERED

Sr. No.	Subjects	Credit Hours	Contact Hours
First Semester			
1.	Linux in Cyber Security	(0+1)	(0+3)
2.	Secure Networks & Protocols	(2+1)	(2+3)
3.	Cyber Security & Risk Management	(2+0)	(2+0)
4.	Cryptography	(2+0)	(2+0)
5.	Cyber Security Laws & Ethics	(2+0)	(2+0)
6.	Applied Machine Learning	(2+0)	(2+0)
7.	*Optional Deficiency Course*: Computer Networks	(0+0)	(2+0)
Second Semester			
8.	Python and Shell Programming for Cyber Security	(0+1)	(0+3)
9.	Digital Forensics	(2+0)	(2+0)
10.	Vulnerability Assessment & Pen testing	(2+1)	(2+3)
11.	Threat Intelligence	(2+0)	(2+0)
12.	Mobile Application Security	(2+0)	(2+0)
13.	Cloud Computing Security	(2+0)	(2+0)

Third Semester

Project / Thesis				Course Work			
Sr. No.	**Subjects**	**Credit Hours**	**Contact Hours**	**Sr. No.**	**Subjects**	**Credit Hours**	**Contact Hours**
1.	Project Thesis	(0+6)	(0+18)	1.	Elective-I	(3+0)	(3+0)
				2.	Elective-II	(3+0)	(3+0)

Fourth Semester

Project / Thesis				Course Work			
Sr. No.	**Subjects**	**Credit Hours**	**Contact Hours**	**Sr. No.**	**Subjects**	**Credit Hours**	**Contact Hours**
1.	Project Thesis	(0+6)	(0+18)	1.	Elective-III	(3+0)	(3+0)
				2.	Elective-IV	(3+0)	(3+0)

The following is a list of elective courses:

Sr. No.	Subjects	Credit Hours	Contact Hours
1.	Blockchain Technology	(3+0)	(3+0)
2.	Business Continuity and Transformation	(3+0)	(3+0)
3.	Internet of Things Security	(3+0)	(3+0)
4.	Database Security	(3+0)	(3+0)
5.	Advanced Malware Analysis and Reverse Engineering	(3+0)	(3+0)
6.	DevSecOps Automation	(3+0)	(3+0)

10.7 CAREER OPPORTUNITIES

Cyber Security 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.

MS Graduates of Cyber Security Program can apply technical knowledge and expertise to work as Security Analyst, Security Administrator, Cryptanalyst as well as for managerial jobs such as Security Consultant. Many posts comprise 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.

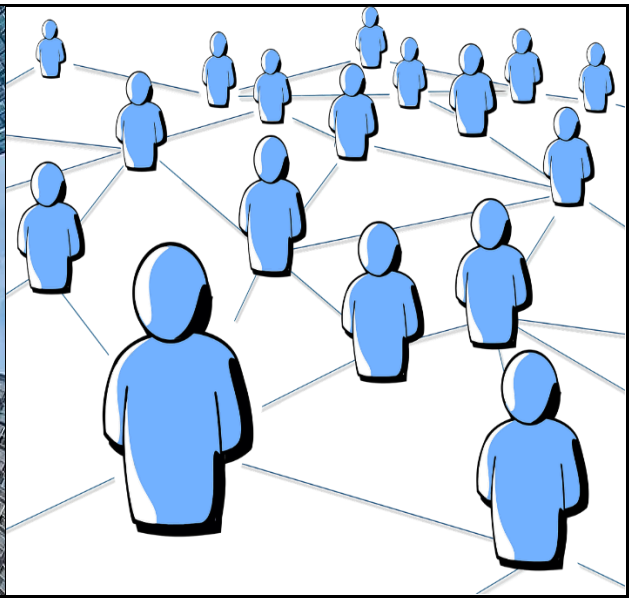
- **INDUSTRIES IN PAKISTAN**
  - Pakistan Telecommunication Corporation Limited (PTCL)
  - Pakistan Telecommunication Authority (PTA)
  - Wateen Telecom
  - Warid Telecom
  - Jazz (VimpelCom and Dhabi Group)
  - Telenor (Telenor Group)
  - Zong (China Mobile)
  - Ufone (PTCL+Ehtisalat)
  - SCO (Special 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



11 COMMUNICATION SYSTEMS & NETWORKS

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.

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.

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.

11.4 ACADEMIC STAFF

Professor & Chairperson: **Dr. Faisal Karim Shaikh** PhD, (Germany)	**Dr. Zulfiqar Ali Arain** PhD, (China)
Professor: **Dr. Abdul Waheed Umrani** PhD, (Singapore)	**Engr. Nafeesa Bohra** ME, (MUET, Pakistan)

Associate Professor: **Dr. Fahim Aziz Umrani** PhD, (UK)	**Engr. Naeem Aijaz Yousfani** ME, (MUET, Pakistan)
Dr. Abdul Latif Memon PhD, (China)	**Engr. Syed Mohsin Ali Shah** ME, (MUET, Pakistan)
Dr. Imran Ali Qureshi PhD, (China)	**Engr. Shanzah Mohsin** ME, (MUET, Pakistan)
Dr. Faheem Yar Khuhawar Ph.D. (Italy)	**Engr. Riaz Ahmed Soomro** ME, (MUET, Pakistan)
Dr. Sajjad Ali Memon PhD, (China)	**Engr. Saima Hafeez** ME, (MUET, Pakistan) – ***On Study Leave***
Dr. Nasrullah Pirzada PhD, (Malaysia)	**Engr. Shakeel A. Laghari** ME, (MUET, Pakistan)
Dr. Badar Munir PhD, (China) – ***On Leave***	**Engr. Mehran M. Memon** ME, (MUET, Pakistan)
Dr. Zafi Shehran Shah PhD, (UK)	**Engr. Hyder Bux Mangrio** ME, (MUET, Pakistan)
Assistant Professor: **Dr. Faisal Ahmed Memon** PhD, (Italy) – ***On Leave***	**Engr. Syed Rizwan Ali Shah** ME, (MUET, Pakistan)
Dr. Abi Waqas Memon PhD, (Italy) – ***On Leave***	**Engr. Saadullah Kalwar** ME, (MUET, Pakistan) – ***On Study Leave***
Dr. Umair Ahmed Korai PhD, (United Kingdom)	

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 Laboratory
2. Optical Communication Laboratory
3. Network & Protocol Design Lab.
4. Transmission & Switching Laboratory
5. Analog & Digital Communication Lab.
6. Project Lab.
7. Cellular Communication Laboratory
8. Digital Signal Processing Laboratory
9. Radio Communication Laboratory
10. PC-2 Laboratory
11. Advance Computing Laboratory
12. Internet of Things Laboratory.

11.6 COURSES OFFERED

Sr. No.	Subject	Credit Hours	Contact Hours
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
	Total	**10+2 = 12**	**10 + 6 = 16**
Second Semester			
6.	5G and Beyond Cellular Networks	2+0	2+0
7.	Network Programming	2+1	2+3
8.	Security Information Management	2+1	2+3
9.	Internet and Mobile Commerce	2+0	2+0
10.	Transport Network Systems	2+0	2+0
	Total	**10+2 = 12**	**10+6 = 16**

Project / Thesis				**Course Work**			
Sr. No.	**Subject**	**Credit Hours**	**Contact Hours**	**Sr. No.**	**Subject**	**Credit Hours**	**Contact Hours**
Third Semester							
11.	Project Thesis	(0+6)	(0+18)	11.	Elective-I	(3+0)	(3+0)
				12.	Elective-II	(3+0)	(3+0)
Fourth Semester							
12.	Project Thesis	(0+6)	(0+18)	13.	Elective-III	(3+0)	(3+0)
				14.	Elective-IV	(3+0)	(3+0)

List of Electives

Sr. No.	Subject	Credit Hours	Contact Hours
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

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). PH.D DEGREE PROGRAMS:

The Institute of Information & Communication Technologies currently offers following PhD Programs:

1. Biomedical Engineering
2. Computer Systems Engineering
3. Mechatronics Engineering (MECH)
4. Software Engineering (SE)
5. Telecommunication Engineering

1. BIOMEDICAL ENGINEERING

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.

1.1 PROGRAM LABORATORIES

The following state-of-the-art laboratories are available for hands on experience. These laboratories provide high speed internet services in centralized environment:

- Biomedical Computing Laboratory
- Biomedical Sciences Laboratory
- Biomedical Engineering Laboratory
- Biomedical Instrumentation Laboratory
- Telemedicine and Research Laboratory
- Nanomedicine Research Laboratory

1.2 ACADEMIC FACULTY

Professor: **Dr. Ahsan Ahmed Ursani** PhD, (France)	**Associate Professor:** **Dr. Muhammad Amir Panhwar** PhD, (China)
Associate Professor: **Dr. Syed Amjad Ali** PhD, (China)	**Assistant Professor:** **Dr. Abdul Raheem Asari** PhD, (Korea)
Associate Professor & Chairperson: **Dr. Abdul Qadir Ansari** PhD, (MUET)	**Dr. Maheen Surahio** PhD, (China)

1.3 LIST OF ELECTIVE COURSES

Sr. No.	Name of Subject	Course Code	Mars			Credit Hours		
			Theory	Lab	Total	Theory	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

2. COMPUTER SYSTEMS ENGINEERING

2.1 PROGRAM MISSION

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.

2.2 PROGRAM OBJECTIVES

The main objectives of the PhD in Computer Systems Engineering are as follows:

i). To develop skillset of students 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 students aware of High-Performance Computing (HPC) methods of measuring and characterizing application and hardware performance of business-based systems.
iv). To acquaint students with free, open-source and high-performance dynamic programming languages for technical computing.

2.3 ACADEMIC STAFF

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

Professor Emeritus: **Dr. Abdul Qadeer Khan Rajput** PhD, (USA)	**Dr. Bushra Naz** PhD, (China)
Chairman & Associate Professor: **Dr. Shahnawaz Talpur** PhD, (China)	**Assistant Professor:** **Dr. Zartasha Baloch** PhD, (MUET, Pakistan)
Associate Professor: **Dr. Sanam Narejo** PhD, (Italy)	**Engr. Rizwan Badar** ME, (MUET, Pakistan)

Associate Professor: **Dr. Sammer Zai** PhD, (South Korea)	**Dr. Irfan Bhacho** PhD, (South Korea)
Dr. Muhammad Ahsan PhD, (South Korea)	**Lecturer:** **Dr. Fawad Mangi** PhD, (Australia)

2.4 LABORATORY FACILITIES

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

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

1. Communication Laboratory
2. Microprocessor Laboratory
3. Advance SW Engineering Laboratory
4. Multimedia and Visual Designer Studio Lab.
5. Computing Laboratory 1
6. Computing Laboratory 2
7. Software Engineering Laboratory
8. Data Management and Internet Laboratory

The following is a list of elective courses offered in a PhD in Computer Systems Engineering:

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

2.5 CAREER OPPORTUNITIES

The PhD in Computer Systems Engineering program offers a transformative journey into advanced research and innovation, preparing scholars to address complex challenges in computing, technology, and engineering. This program equips candidates with cutting-edge expertise in areas such as embedded systems, cybersecurity, IoT, AI, and high-performance computing. With a strong emphasis on interdisciplinary collaboration and original research, graduates contribute groundbreaking advancements in academia, industry, and beyond. Whether aspiring to become a thought leader, innovator, or educator, this program provides the knowledge, mentorship, and resources to make a meaningful impact in the ever-evolving field of computer systems engineering.

3. MECHATRONIC ENGINEERING

3.1 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.

3.2 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.

3.3 SCOPE AND EXPECTED OUTCOMES

After successful completion of the program, a graduate will be able to:

1. Demonstrate skills peculiar to independent researcher in the field of Mechatronic Engineering.
2. Contribute towards the extension of knowledge boundaries in the domain of Mechatronic Engineering.
3. Innovate solutions aimed at progress of the society.

3.4 ACADEMIC STAFF

Professor & Chairperson: **Dr. Jawaid Daudpoto** PhD, (UK)	**Assistant Professor:** **Dr. Shadi Khan Baloch** PhD, (Turkey)
Professor: **Dr. Arbab Nighat Kalhoro** PhD, (China)	**Dr. Saifullah Samo** PhD, (China)

3.5 COURSES OFFERED

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
1.	Mathematical Modelling and Simulation	3	100
2.	Research Methodology	3	100
3.	Elective – I	3	100
Second Semester			
4.	Elective – II	3	100
5.	Elective – III	3	100
6.	Elective – IV	3	100
Third Semester & Onwards			
7.	Thesis	30	

List of Elective Subjects

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	-

4. SOFTWARE ENGINEERING

4.1 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 student are remained engaged in the internships to shine their skills and understand the market standards.

4.2 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.

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:

- To provide post-graduates in-depth knowledge of planning, designing, and implementing software systems in accordance with the job market.
- To provide students with knowledge of advanced software engineering skills to apply creative and leading roles in professional and research areas.
- To prepare post-graduates to measure the reliability and feasibility of software applications for cost-effective and sustainable development.

4.3 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)

4.4 Elective Courses Offered

PhD Elective Courses in Software Engineering

Sr. No.	Subjects	Credit Hours	Marks
First Semester			
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. TELECOMMUNICATION ENGINEERING

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.

5.1 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.

5.2 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.

5.3 ACADEMIC STAFF

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

Meritorious Professor & Chairperson: **Dr. Aftab Ahmed Memon** PhD, (Japan)	**Dr. Nasrullah Pirzada** PhD, (Malaysia)
Professor: **Dr. Abdul Waheed Umrani** PhD, (Singapore)	**Dr. Badar Munir** PhD, (China) – ***On Leave***
Dr. Faisal Karim Shaikh PhD, (Germany)	**Dr. Zafi Shehran Shah** PhD, (UK)
Associate Professor: **Dr. Fahim Aziz Umrani** PhD, (UK)	**Assistant Professor:** **Dr. Faisal Ahmed Memon** PhD, (Italy) – ***On Leave***
Dr. Abdul Latif Memon PhD, (China)	**Dr. Abi Waqas Memon** PhD, (Italy)

Dr. Imran Ali Qureshi PhD, (China)	**Dr. Umair Ahmed Korai** PhD, (UK)
Dr. Faheem Yar Khuhawar Ph.D. (Italy)	**Dr. Zulfiqar Ali Arain** PhD, (China)
Dr. Sajjad Ali Memon PhD, (China)	

5.4 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.
2. Project Laboratory
3. Transmission and Switching Lab.
4. Networking and Protocol Design Lab.
5. Optical Communication & Photonics Lab.
6. PC Laboratory I
7. Cyber Security Laboratory
8. Cellular Communications Laboratory
9. Advanced Computing Laboratory
10. Digital Signal Processing Laboratory
11. Radio Communication Laboratory
12. Internet of Things (IoT) Laboratory

5.5 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

5.6 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:

- 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

3. MEHRAN UNIVERSITY INSTITUTE OF SCIENCE, TECHNOLOGY AND DEVELOPMENT (MUiSTD)

(A). MASTER DEGREE PROGRAMS:

1. BUSINESS ADMINISTRATION

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.

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.

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, MPhil 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.

1.4 ACADEMIC STAFF

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

Professor & Director: **Dr. Asif Ali Shah** PhD, (MUET, Pakistan)	Dr. Saba Qureshi Ph.D. (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 Associate:** **Dr. Asma Zubedi** PhD, (China)
Dr. Arifa Bano Talpur PhD, (UoS, Pakistan)	

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 - I
2. Computer Lab - II

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			
5.	Problem Solving and Decision Making	(3+0)	100
6.	Strategic Management	(3+0)	100
7.	Portfolio and Risk Management	(3+0)	100
8.	Strategic Marketing Management	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective- I	3+0	100	Thesis	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
11.	Elective-III	3+0	100	Thesis	6+0	200
12.	Elective-IV	3+0	100			

The following is a list of elective courses:

- **Elective Courses in Finance**

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 Marketing**

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 Human Resource Management**

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 Operations Management**

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 Innovation and Entrepreneurship**

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

2. MASTER OF SCIENCE IN HUMAN RESOURCE MANAGEMENT

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.

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.

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, MPhil 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.

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 (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)		
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**	**Marks**
Third Semester						
9.	Elective-I	3+0	100	Thesis	6+0	200
10.	Elective-II	3+0	100			
Fourth Semester						
11.	Elective-III	3+0	100	Thesis	6+0	200
12.	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). PH.D DEGREE PROGRAMS:

1. MANAGEMENT SCIENCES

1.1 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.

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 the use of Science, Technology, Innovation and Entrepreneurship tools under the concept of "Conceive, create and commercialize" of MUISTD.

1.3 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.

2.12.3 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

2. SCIENCE, TECHNOLOGY AND INNOVATION POLICY

2.1 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.

2.2 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.

2.3 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.

2.4 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

2.5 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.

4. INSTITUTE OF ENVIRONMENTAL ENGINEERING AND MANAGEMENT

(A). MASTER DEGREE PROGRAMS:

1. ENERGY AND ENVIRONMENTAL ENGINEERING

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.

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.

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.

1.4 ACADEMIC STAFF

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

Professor & Director: **Dr. Abdul Razaque Sahito** PhD, (MUET, Pakistan)	**Lecturer:** **Engr. Sajid Hussain Mangi** PhD, (in Progress) - ***On Study Leave***
Professor: **Dr. Sheeraz Ahmed Memon** PhD, (South Korea)	**Lecturer (On Contract):** **Engr. Waheed Ali Khokhar** MS, (MUET, Pakistan)
Associate Professor: **Dr. Muhammad Safar Korai** PhD, (MUET, Pakistan)	**Engr. Danish Ahmed Khokhar** MS, (MUET, Pakistan)
Assistant Professor: **Engr. Azizullah Channa** PhD, (in Progress) - ***On Study Leave***	**Engr. Siddiqa Soomro** ME, (MUET, Pakistan)
Engr. Engr. Maryam Arain PhD, (in Progress) - ***On Study Leave***	**Engr. Saheba Memon** M.E (MUET, Pakistan)

1.5 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
2. Water & Soil Pollution Control Lab.
3. Microbiology Laboratory
4. Solid Waste Management Laboratory
5. Air & Noise Pollution Control Lab. Equipment
6. Hi-Tech Laboratory
7. Thermo Laboratory

1.6 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			
6.	Design of water and wastewater treatment plants	(3+0)	100
7.	Renewable Energy Resources Engineering	(3+0)	100

8.	Solid and Hazardous Waste Management	(3+0)	100
9.	Professional Development and Practices	(2+0)	50
10.	Energy and Environmental Engineering Lab-02	(0+1)	50

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS BY RESEARCH)	
Sr. No.	**Subjects**	**Credit Hours**	**Marks**	**Subjects**	**Credit Hours**
Third Semester					
11.	EIA and Climate Change	3+0	100	Thesis	6+0
12.	Modelling in Energy and Environmental Engineering	3+0	100		
Fourth Semester					
13.	Waste to Energy Engineering	3+0	100	Thesis	6+0
14.	Occupational Health & Safety	3+0	100		

1.7 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). PH.D DEGREE PROGRAMS:

1. ENVIRONMENTAL ENGINEERING

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

5. INSTITUTE OF PETROLEUM AND NATURAL GAS ENGINEERING

(A). MASTER DEGREE PROGRAMS:

1. PETROLEUM ENGINEERING

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 M.E 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 program provides graduates engineers with 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.

1.2 PROGRAM MISSION

The Master's Degree 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.

1.3 PROGRAM VISION:

The Master's Degree program in Petroleum Engineering strive to provide world class education and research opportunities in the field of Petroleum Engineering at par with national and international levels.

1.4 PROGRAM OBJECTIVES

The objectives of the ME 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.

1.5 ACADEMIC STAFF

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

Associate Professor and Director: **Dr. Muhammad Khan Memon** PhD, (Malaysia)	**Engr. Abdul Qadir Shaikh** ME, (MUET, Pakistan)
Professor: **Dr. Abdul Haque Tunio** PhD, (MUET, Pakistan)	**Engr. Mukhtiar Ali Talpur** ME, (MUET, Pakistan)
Associate Professor: **Dr. Aftab Ahmed Mahesar** PhD, (MUET, Pakistan)	**Engr. Irshad Ali Gopang** ME, (MUET, Pakistan)
Dr. Khalil Rehman Memon PhD, (MUET, Pakistan)	**Engr. Faisal Najam Abro** ME, (MUET, Pakistan)
Assistant Professor: **Dr. Ubedullah Ansari** PhD, (China)	**Lecturer:** **Engr. Muhammad Ali Memon** ME, (MUET, Pakistan)
Engr. Naveed Ahmed Ghirano ME, (MUET, Pakistan)	**Engr. Imran Ahmed Hulio** ME, (MUET, Pakistan)

1.6 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. Petro physics & Drilling Fluids Lab.
3. Petroleum Refinery Lab.
4. Drilling & Production Lab
5. Oil Testing & Gas Engineering Lab
6. Simulation Lab
7. Computer Lab

1.7 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.	Well Performance	(3+0)	100

Second Semester			
1.	Enhanced Oil Recovery	(3+0)	100
2.	Research Methods & Design	(3+0)	100
3.	Advanced Well Logging & Interpretation	(3+0)	100
4.	Petroleum Reservoir Simulation	(3+0)	100

STREAM-I (MASTERS BY COURSE)				STREAM-II (MASTERS 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
Third Semester (Elective Courses)			
1.	Computational Reservoir Geo mechanics	(2+0)	50
2.	Gas Processing	(2+0)	50
3.	Well Stimulation Design	(2+0)	50
4.	Fluid Flow in Porous Media	(2+0)	50
5.	Reservoir Engineering Management	(2+0)	50
Fourth Semester (Elective Courses)			
1.	Petro physics	(2+0)	50
2.	Unconventional Hydrocarbon Resources	(2+0)	50
3.	Artificial Lift Techniques	(2+0)	50
4.	Advanced Mathematics in Reservoir Engineering	(2+0)	50
5.	Well Integrity	(2+0)	50

1.8 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, MPCL, Prime oil and international oil companies, consultancy firms and service providers.

A completed master's degree also forms a good basis for a future career as a researcher.

(B). PH.D DEGREE PROGRAMS:

1. PETROLEUM ENGINEERING

6. 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 the 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. Dur Muhammad Pathan Pro-Vice Chancellor, MUET, Khairpur Campus
2. Prof. Dr, Syed Hyder Abbas Musavi, Director Academics
3. Prof. Dr. Rafique Ahmed Memon, 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 In-charge Chairman, P & NG Engineering Department
8. Dr. Hadi Bux Chajro Chairman, Basic Sciences & Related Studies
9. 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. Muhammad Rakhyal Bhutto In-charge Project Director
16. Mr. Allah Bachayo Memon Deputy Librarian
17. Dr. Mujeeb Iqbal Soomro Additional Director QEC
18. Mr. Pir Syed Asif Hussain Shah Jilani Deputy Director, Sports

6.1 CIVIL ENGINEERING

The program of M.E. 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.

6.1.1 THE FACULTY

Professor: **Prof. Dr. Kanya Lal Khatri** PhD, (Australia)	**Engr. Touqeer Ali Rind** ME, (Pakistan)
Dr. Syed Naveed Raza Shah PhD, (Malaysia) - ***On Sabbatical Leave***	**Engr. Dhanesh Kumar** ME, (Malaysia)
Associate Professor and Chairman: **Dr. Sajjad Ali Mangi** PhD, (Malaysia)	**Engr. Sanghaar Bhutto** ME, (Malaysia)
Associate Professor: **Dr. M. Jaffar Memon** PhD, China.	**Engr. Mudasar H. Janwery** ME, (Pakistan)
Dr. Ghulam Shabir Solangi PhD, (Pakistan)	**Engr. Subash Kumar** ME, (Pakistan) - ***On Contract Basis***
Assistant Professors: **Dr. Dildar Ali Mangnejo** PhD, (Pakistan)	**Dr. Rizwanullah Faiz** PhD, (Malaysia) - ***On Contract Basis***
Engr. Abdul Razzaque Sandhu ME, (Pakistan)	**Research Associates:** **Engr. Naveed Ali Channa** ME, (Pakistan) - ***On Contract Basis***
Engr. Rabia Soomro ME, (Pakistan)	**Laboratory Engineers:** **Engr. Ghulam Rasool Siddiqui** ME, (Pakistan)

Lecturers: **Engr. Abdul Qayoom Memon** PhD, Thailand.	**Engr. Ashfaq Ahmed Jhatial** ***On Study Leave***
Engr. Hemu Karira PhD, (Pakistan)	

6.1.2 LABORATORY FACILITIES

For M.E 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
2. Fluid Mechanics & Hydraulics Laboratory
3. Surveying Laboratory
4. Highway Engineering Laboratory
5. Soil Mechanics Laboratory
6. Environmental Engineering Laboratory
7. Computer Laboratory
8. Software Laboratory
9. Engineering Drawing Hall

6.1.3 THE COURSES

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.

6.1.4 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 Civil engineering program at MUET, SZAB Campus provides clear route to a professional career in Civil Engineering.

6.2 ELECTRICAL POWER ENGINEERING

6.2.1 THE FACULTY:

Associate Professor: **Dr. Mazhar Hussain Baloch** Post Doc., (USM, Malaysia) - ***On Lien***	**Dr. Sajid Hussain Qazi** PhD, (UTM, Malaysia) - ***On Sabbatical Leave***
Dr. Touqeer Ahmed Jumani PhD, (UTM, Malaysia) - ***On Lien***	**Lecturers:** **Engr. Kalsoom Baghat** ME, (MUET, Pakistan) - ***On Study Leave***
Assistant Professor and Chairman: **Dr. Mohsin Ali Tunio** PhD, (UTM, Malaysia)	**Engr. Shafqat Hussain Memon** ME, (MUET, Pakistan) - ***On Study Leave***
Assistant Professors: **Engr. Shakir Ali Soomro** PhD, (MUET, Pakistan) - ***On Study Leave***	**Engr. Rasool Akhtar Alias Osama** ME, (MUET, Pakistan) - ***On Study Leave***

Engr. Nadeem Ahmed Tunio PhD, (MUET, Pakistan)	**Engr. Muhammad Amir Raza** ME, (MUET, Pakistan)
Dr. Ahsanullah Memon PhD, (UTM, Malaysia)	

6.2.2 THE COURSES

The Curses of M.E 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 M.E Electrical Power Engineering Courses mentioned on the relevant section of MUET Jamshoro in this prospectus.

6.2.3 LABORATORIES

The M.E 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 M.E Electrical Power Engineering Program.

Following Laboratories have been established for the program:

Sr. No.	List of Laboratories	Sr. No.	List of Laboratories
01.	Power System	06.	Communication System
02.	Instrumentation & Control	07.	Electrical Machines
03.	Basic Electrical Engineering	08.	Power Electronics
04.	High Voltage Engineering	09.	Computer Lab
05.	Basic/Applied Electronics Engineering	10.	Software Lab

6.2.4 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.

6.3 ENERGY SYSTEMS ENGINEERING

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.

6.3.1 THE FACULTY

Associate Professors: **Dr. Sadiq Ali Shah** PhD, (UK)	**Engr. Majid Ali Wassan** M.E., Malaysia - ***On Study Leave***

Dr. Muhammad Ali Abro PhD, (South Korea) - ***On Study Leave***	**Engr. Qadir Nawaz** ME, (Pakistan) - ***On Study Leave***
Dr. Mujeeb Iqbal Soomro PhD, (South Korea)	**Lecturers:** **Engr. Aurangzaib Wadho** ME, (Pakistan)
Assistant Professor and Chairman: **Dr. Aqeel Ahmed Bhutto** PhD, (Malaysia)	**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)
Dr. Zaheer Ahmed PhD, (Turkey)	**Engr. Awais Junejo** ME, (Pakistan) - ***On Study Leave***
Engr. Jahanzaib Soomro M.E., Pakistan.	**Engr. Muhammad Haris Khan** ME, (Pakistan)
Engr. Ali Nawaz Sanjrani ME, (Pakistan) - ***On Study Leave***	

6.3.2 THE COURSES

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.

6.3.3 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 Condoning Laboratory
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

6.3.4 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.

6.4 PETROLEUM ENGINEERING

In recent years, Petroleum Engineering has gained considerable importance due to the vital role of oil & gas sector in the economy of the country. Considering the fact that province of Sindh is very rich in oil and gas reserves and also plays an important role in country's energy development, consumption and economic growth, the MUET SZAB Campus Khairpur has decided recently to offer ME Petroleum Engineering program.

6.4.1 THE FACULTY

Associate Professor & Chairman: **Dr. Asadullah Memon** PhD, (China)	**Eng. Waseem Mumtaz Kalwar** ME, (Pakistan) - ***On Lien***
Assistant Professors: **Dr. Bilal Shams Memon** PhD, (China) - ***On Lien***	**Engr. Temoor Muther** ME, (Pakistan) - ***On Study Leave***
Engr. Imran Ali Memon ME, (Pakistan)	**Engr. Khalique Wazir** ME, (Pakistan) - ***On Contract***
Engr. Faisal Hussain Memon ME, (Pakistan) - ***On Study Leave***	**Engr. Asad Ahmed Memon** ME, (Pakistan) - ***On Contract***
Engr. Ghulam Abbas Qambrani ME, (Malaysia) - ***On Study Leave***	**Engr. Saif-ur-Rehman** ME, (Pakistan) - ***On Contract***
Lecturers: **Engr. Adnan Aftab Nizamani** M.Phil., (Malaysia) - ***On Study Leave***	**Senior Lab Engineer:** **Engr. Abdul Wajid Shaikh** ME, (Pakistan)
Engr. Abdul Samad Shaikh ME, (Pakistan)	**Lab Engineers:** **Engr. Umaid Ali Uqaili** ME, (Pakistan)
Engr. Sunder Sham Jeswani M.E., Pakistan.	**Engr. Sohail Ahmed Shaikh** ME, (Pakistan)
Engr. Shoaib Ahmed Memon ME, (Pakistan)	**Engr. Faheem Mumtaz Kalwar** ME, (Pakistan)
Engr. Zaheer Hussain Zardari ME, (Pakistan) - ***On Study Leave***	

6.4.2 THE COURSES

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.

6.4.3 LABORATORY FACILITIES

Well-equipped laboratories have been established to conduct experimental work and measuring rock properties, reservoir fluid properties, drilling fluid properties and interfacial properties. The computer labs feature software for reservoir simulation (Exodus V90 & Sendra), Drilling Engineering (Drilling & work over simulator) and Production Engineering (IPM suits).

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

6.4.4 CAREER OPPORTUNITIES

A petroleum engineer is involved in nearly all of the stages of oil and gas field evaluation, development and production. The aim of their work is to maximize hydrocarbon recovery at minimum cost while maintaining a strong emphasis on reducing environmental impact. The various opportunities are available in oil and gas sector during the exploration, drilling and production phases. After graduation, our graduates are able to work with national and multinational E&P and service companies such as OGDCL, PPL, UEP, Schlumberger, Weatherford, Polish Oil & Gas Company, Hilong oil service and Engineering, and refinery sectors.

7. 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:

7.1 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 1800 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 with internet facility. 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 through a prescribed Admission Form available with the Office of the Provost Hostels, at the Student Teacher Center of the University. The seats in the hostels are allotted by allocating the 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 from 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 common halls are well equipped with recreational facilities like large wall-mounted televisions / LCDs, table tennis, badminton and newspapers and magazines. Most of the hostels have outdoors basketball courts and inter-hostels sports events and debate contests are organized regularly. 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 any further information, please contact:

Provost (Hostels)
Telephone No. 022-2772299

7.2 LIBRARY FACILITIES

The Mehran UET, Library & Online Information Center contains more than 180700 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 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 32000 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:

Librarian
Tel. No. 022-2771169, Ext. No. 6300,
and Email: librarian@admin.muet.edu.pk

7.3 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 connection.

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.

7.4 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.

Provost Hostels,
Tel. No. 022 2109137, Ext. No. 3005,
and Email: provost.hostels@admin.muet.edu.pk

7.5 TRANSPORT FACILITIES

The University boasts a comprehensive fleet of buses, strategically designed to enhance convenience for its students, faculty, and staff. These buses operate on multiple routes, linking the campus with prominent locations including Jamshoro, Hyderabad City, Qasimabad, Latifabad, and Kotri. In order to utilize this transportation service, students are obligated to pay nominal fees.

Furthermore, the University diligently maintains a diverse range of specialized equipment and vehicles, dedicated to upholding the campus's cleanliness and fostering an optimal environment. Moreover, as part of its future plans, the University intends to introduce solar shuttles exclusively for student transportation within the premises.

Inchagre Transport Section
Phone: +92 222109073, 22 2771153, Ext.: 6800,
http://www.muet.edu.pk/transport-section

7.6 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. Inter-batch, Interdepartmental, and Inter-Hostels 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 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 Inter Department, Inter Hostel, Inter Batch and 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.

7.7 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.

7.8 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

7.9 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:

Advisor Students' Affairs
Landline: 0222772251-72 (Ext: 2030)
Email: asa@admin.muet.edu.pk

Deputy Advisors Students' Affairs
Email (1): shuaib.shaikh@faculty.muet.edu.pk
Email (2): isma.farah@faculty.muet.edu.pk

7.10 INTERNATIONAL MEMBERSHIP OF THE UNIVERSITY

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.

7.10.1 THE UNIVERSITY HAS SIGNED MEMORANDUM OF UNDERSTANDING WITH THE FOLLOWING FOREIGN UNIVERSITIES/INSTITUTES DURING THE YEARS 2022-2025.

Sr. No.	Name of Company/Institute/Organization	Date of MOU Signed
MoUs Signed between 2024-2025		
1	Zakat/Need Cum Merit Scholarship	16-10-2024
2	Pakistan Cables Limited	15-10-2024
3	Jamshoro Power Company Limited (JPCL)	04-10-2024
4	TiE Islamabad the Indus Entrepreneurs	10-09-2024
5	Zindigi Prize / JS Bank	29-09-2024
6	Sindh Economic Zones Management Company (SEZMC)	30-09-2024
7	National Incubation Centre, Hyderabad	12-06-2024
8	Confucius Class Room at Cadet College Petaro	07-08-2024
9	Civil Society Support Program (CSSP)	-
10	Civil Aviation Training Authority Institute (CATI), Hyderabad	26-02-2024
11	Research & Development Foundation (RDF)	14-11-2024
12	Times Consultants TE	13-11-2024
MoUs Signed between 2023-2024		
1	Universiti Tun Hussein Onn Malaysia	03-03-2023
2	Center of Stretchable and Textile Electronics (CESTE)	03-04-2023
3	ADVON Private Limited	23-05-2023
4	Red Marker System (Pvt.) Limited	07-06-2023
5	Fast Cables Limited	17-11-2023
6	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	15-12-2023
MoUs Signed between 2022-2023		
1	Samane Shifa Foundation, Pakistan	10-05-2022
2	Smart Mentor FZ-LLC, Dubai, UAE	10-05-2022
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 (DFST), 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

8. FEES STRUCTURE

MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO

DIRECTORATE OF ADMISSIONS

FEE BREAKUP FOR THE STUDENTS OF POSTGRADUATE STUDIES FOR ACADEMIC SESSION-202425 (25-BATCH)

A. Admission and Semester Fees

Sr. No.	Description	ME/M.ARCH./M.CRP/MS/MBA/M.Phil.				PH.D							
		Ist Year		Final Year		1st Yeat		2nd Year		3rd Year		4th Yeat	
		1st Semester	2nd Semester	3rd Semester	4th Semester	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
1	Admission Fee (Per Semester)	Rs. 5,500	Rs. 5,500	Rs. 5,500	Rs. 5,500	Rs. 11,000	Rs. 11,000	Rs. 11,000	Rs. 11,000	Rs. 11,000	Rs. 11,000	Rs. 11,000	Rs. 11,000
2	PERN Fee (Per Semester)	Rs. 1,650	Rs. 1,650	Rs. 1,650	Rs. 1,650	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200
3	Student Identity Card Fee (Per Year)	Rs. 880	Rs. -	Rs. 880	Rs. -	Rs. 880	Rs. -	Rs. 880	Rs. -	Rs. 880	Rs. -	Rs. 880	Rs. -
4	Enrolment Card Fee (Once)	Rs. 1,650	Rs. -	Rs. -	Rs. -	Rs. 1,650	Rs. -	Rs. -	Rs. -	Rs. -	Rs. -	Rs. -	Rs. -
5	Caution Money - Refundable (Once)	Rs. 2,200	Rs. -	Rs. -	Rs. -	Rs. 5,500	Rs. -	Rs. -	Rs. -	Rs. -	Rs. -	Rs. -	Rs. -
6	Tuition Fee (per Semester)	Rs. 44,000	Rs. 44,000	Rs. 44,000	Rs. 44,000	Rs. 55,000	Rs. 55,000	Rs. 55,000	Rs. 55,000	Rs. 55,000	Rs. 55,000	Rs. 55,000	Rs. 55,000
7	Library Fee (Per Semester)	Rs. 1,100	Rs. 1,100	Rs. 1,100	Rs. 1,100	Rs. 4,400	Rs. 4,400	Rs. 4,400	Rs. 4,400	Rs. 4,400	Rs. 4,400	Rs. 4,400	Rs. 4,400
8	Field Visits & Other Activities (Per Semester)	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200	Rs. 2,200
9	Games Fee (Per Semester)	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210	Rs. 1,210
10	Examinations Fee (including Marks Certificate) for Regular Examinations (Per Semester)	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750	Rs. 2,750
11	Transport Charges (Per Semester)	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400	Rs. 15,400
	Total Admission and Semesters Fee	**Rs. 78,540**	**Rs. 73,810**	**Rs. 74,690**	**Rs. 73,810**	**Rs. 102,190**	**Rs. 94,160**	**Rs. 95,040**	**Rs. 94,160**	**Rs. 95,040**	**Rs. 94,160**	**Rs. 95,040**	**Rs. 94,160**

B. Other Fees

Sr. No.	Description	ME/M.ARCH./M.CRP/ MS/MBA/M.Phil.	PH.D
1	Research Proposal Processing Fee (Once)	Rs. 2,200	Rs. 4,400
2	Thesis Evaluation Fee (Once)	Rs. 11,000	Rs. 22,000
	Total Admission and Semesters Fee	**Rs. 13,200**	**Rs. 26,400**

Note:

1. Admission Form and Processing Fee of Rs. 4,950/- (including pre-admission test arrangement charges, etc.) is charged separately at the time of online registration.
2. The Re-Admission Fee amounting to Rs. 3,300/- is charged as and when a student is re-admitted.
3. If any of the students fails to deposit the semester fee up to deadline, he/she will be charged the following late fee surcharge in addition to the readmission:
   - i. **An amount of Rs. 1,000/- up to Mid Semester Examination.**
   - ii. **An amount of Rs. 2,000/- up to the Suspension of Classes.**
   - iii. **An amount of Rs. 3,000/- up to the Start of Semester Examination.**
4. Fees for all additional semester(s) shall be charged in continuation to preceding semesters.

Director Admissions