PROSPECTUS

Postgraduate Programs

2016-2017

ISO 9001 Certified

Mehran University of Engineering & Technology, Jamshoro, Sindh-Pakistan

www.muet.edu.pk

POSTGRADUATE PROSPECTUS

Mission

The Mehran University aims to promote technological change and sustainable development through higher education, research and outreach. Towards this end, it will provide a rewarding and challenging environment for faculty, staff and students.

Mehran University of Engineering & Technology, Jamshoro, Sindh-PAKISTAN

www.muet.edu.pk

This prospectus has been prepared and published under the supervision of the following committee.

Prof. Dr. B S Chowdhry
Dean Faculty of EECE
Tel: +92-022-2771558 Exch. +92-022-2772250-70 Ext. 6200 Fax: +92-022-2771382
Email: dean.feece@admin.muet.edu.pk

Prof. Dr. Mukhtiar Ali Unar
Director
Institute of Information & Communication Technologies (IICT)
Tel: +92-022-2771206, +92-022-2772253-58(6203) Fax: +92-022-2771382
Email: director.iict@admin.muet.edu.pk mukhtiar.unar@faculty.muet.edu.pk

Prof. Dr. Khan Muhammad Brohi
Director
Institute of Environmental Engineering
Tel: +92-022-2771182, +92-022-2772253-58(4402) Fax: +92-022-2771382
Email: director.ieem@admin.muet.edu.pk, kbrohi@hotmail.com

Prof. Dr. Khanji Harijan
Director
Postgraduate Studies
Tel: +92-022-2771214, +92-022-2772253-58(2040) Fax: +92-022-2771382
Email: director.pgs@admin.muet.edu.pk

Prof. Dr. Suhail A. Soomro
Director
Institute of Petroleum & Natural Gas Engineering
Tel: +92-022-2771226, +92-022-2772253-58(4300) Fax: +92-022-2771214
Email:dir.ipng@admin.muet.edu.pk, suhail.soomro@faculty.muet.edu.pk

Prof. Dr. Zubair Ahmed Memon
Co-Director
Institute of Information & Communication Technologies (IICT)
Tel: +92-022-2771351, +92-022-2772253-58(6205) Fax: +92-022-2771382
Email: zubair.memon@faculty.muet.edu.pk

Dr. Arabella Bhutto
Co-Director
Mehran University Institute of Science, Technology and Development
Tel: +92-022-27722432, +92-022-2772253-58(6710) Fax: +92-022-2771382
Email: co.director@admin.muet.edu.pk

Dr. Tanweer Hussain
Co-Director
Postgraduate Studies
Tel: +92-022-2771214, +92-022-2772253-58(2040) Fax: +92-022-2771382
Email: tanweer.hussain@faculty.muet.edu.pk

NOTICE:
The university reserves the right to modify or cancel, without any notice any statement in this prospectus and does not accept any responsibility for any consequences of such modification or cancellation.

MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Mission

The Mehran University of Engineering and Technology believes in establishing conducive environment for top of the class professional education and research. We aim to produce quality professionals who uphold and advance for the integrity, honor, and dignity of their profession, while taking active part in the development of the society.

Quality Policy

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

1. **Customer Focus**
   The University considers the students as its direct customers and their sponsors, the industry, the government and the society as its indirect customers; and commits itself to satisfy their positive needs and expectations.

2. **Quality Leadership**
   The management and the faculty shall take a lead in furthering the cause of education by maintaining the highest degree of quality outcomes.

3. **Student Involvement**
   Students play a significant role in maintaining a progressive learning environment in the University. Their positive involvement at all appropriate levels shall be ensured to accomplish the common goals.

4. **Compliance With Statutory Requirements**
   Every individual working for or studying in the University shall ensure compliance with the University Act, Statutes, Regulations and Rules.

5. **Continual Improvement**
   Every individual working for or studying in the University shall seek continual improvement in performance.

6. **Integrity of the Learning Environment**
   Integrity of the learning environment shall be maintained for ensuring optimal outcomes.

Optimization of Resources:

All human and material resources shall be fully optimized through continual minimization of the waste of these resources.

Contents

Administration

Vice Chancellor Telephone 022-2771197	Prof. Dr. Mohammad Aslam Uqaili B.E (NED), MS (UK), Ph.D (UK)
Dean Faculty of Electrical, Electronic and Computer Engineering Telephone: 022-2771558	Prof. Dr. B.S. Chowdhry B.E (MUET), Ph.D (UK), Post-Doc (UK)
Dean Faculty of Architecture & Civil Engineering Telephone: 022-2771558	Prof. Dr. Ghous Bux Khaskheli B.E (MUET), M.Sc, Ph.D (UK)
Dean Faculty of Science, Technology & Humanities Telephone: 022-2771558	Prof. Dr. Pir Roshanddin Shah Rashdi B.E (MUET), Ph.D (UK), Post-Doc (UK)
Dean Faculty of Engineering Telephone: 022-2771558	Prof. Dr. Hafeez-ur-Rehman Memon B.E (MUET), Ph.D (UK), Post-Doc (UK)
Director (Honorary) Mehran University Institute of Science, Technology & Development	Prof. Dr. S.M. Qureshi B.E (NED), M.E (Thailand), Ph.D (UK)
Co-Director Mehran University Institute of Science, Technology & Development	Dr. Arabella Bhutto B.E, M.E (MUET), M.Sc (UK), Ph.D (UK)
Director/Project Director Institute of Water Resources Engineering & Technologies/ U.S.-Pakistan Center for Advanced Studies in Water	Prof. Dr. Bakhshal Khan Lashari B.E (SAU), M.E (MUET), Ph.D (Poland)
Director Institute of Information & Communication Technologies	Prof. Dr. Mukhtiar Ali Unar B.E (MUET), M.Sc, Ph.D, Post-Doc (UK)
Co-Director Institute of Information & Communication Technologies	Prof. Dr. Zubair Ahmed Memon B.E (MUET), Ph.D (MUET)
Director Institute of Environmental Engineering & Management	Prof. Dr. Khan Muhammad Brohi B.E (MUET), Ph.D (Japan)
Director Institute of Post-Graduate Studies	Prof. Dr. Khanji Harijan B.E, Ph.D (MUET)
Co-Director Institute of Post-Graduate Studies	Dr. Tanweer Hussain B.E (MUET), Ph.D (UK)
Director Institute of Petroleum & Natural Gas Engineering	Prof. Dr. Suhail Soomro, B.E (MUET), MSc (UK), Ph.D (MUET)
Registrar Telephone: 022-2771371	Prof. Dr. Tauha Hussain Ali B.E (MUET), M.E (Singapore), Ph.D (Australia)
Director Finance Telephone: 022-2771442	Engr. Munir Ahmed Shaikh B.E (MUET), MBA, M.A (Sindh)
Director Planning & Development Telephone: 022-2771254	Engr. Ashfaque Ahmad Isani B.E, M.E (MUET)
Controller of Examination Telephone: 022-2771361	Mr. Suhail A Khatian
Librarian (In-Charge) Telephone: 022-2771254	Mr. Azam Ali Halepota

INTRODUCTION

Industrial and technological development in Pakistan has been quite rapid since its independence and particularly during the sixties and seventies. The main fields of development have been related to the enhancement of agriculture, establishment and up-gradation of industries and exploration of its indigenous resources. This development has resulted in increased demand for qualified engineers in different fields in addition to other professionals. In order to meet this demand and to provide an opportunity of engineering education to the people hailing from the interior of Sindh Province, Sindh University Engineering College was established in 1963 as a constituent college of University of Sindh (then spelt 'Sind') in Jamshoro about 15 km. from Hyderabad on the right bank of river Indus.

The Education Policy of 1972 provided for upgradation of the Sindh University Engineering College to the level of a University of Engineering and Technology. Accordingly, the college was first declared as an additional campus of the University of Sindh headed by a Pro-Vice-Chancellor in July 1976 and later upgraded to the level of a full-fledged independent University on 1st March, 1977 through an ordinance issued by the Government of Sindh. The ordinance was later converted into an Act of the Provincial Assembly of Sindh Province. Initially, the Additional Campus as well the Mehran University was established in the City of Nawabshah. However, in 1979, the Act of the University was amended and the seat of the University was retained at Jamshoro, while a constituent college was maintained at Nawabshah which has also become an independent university in 1996.

In order to promote Engineering education to the people of interior Sindh at their door step, the Government of Sindh established a constituent college of Mehran University of Engineering & Technology named as “Mehran University College of Engineering & Technology, Khairpur Mir’s”. The college has been upgraded as a Campus of Mehran University of Engineering & Technology, Jamshoro, and renamed as “Mehran University of Engineering & Technology, Shaheed Zulfiqar Ali Bhutto Khairpur Mir’s Campus”.

Most of the laboratories and workshops of the teaching departments are properly equipped and practical as well as demonstrational training is imparted to the students wherever applicable. Continuous efforts are ongoing to upgrade these facilities for the practical training and new equipment is acquired for this purpose. Additionally, training to the concerned staff is also organized within the University as well as outside. In some cases, where the training facilities are not available within the University, the students are sent to suitable institutes in Karachi or elsewhere to undergo adequate training. Every department has been provided adequate number of personal computers and e-mail and Internet facilities for the training and use of students as well teaching staff.

The postgraduate courses were started in the University in 1978 leading to Master’s Degree, initially, in three branches. At present, courses are offered in the specialized fields of ‘Structural Engineering; Civil Engineering; Geo-technical and Highway Engineering; Construction Management; City and Regional Planning; Irrigation and Drainage Engineering; Textile Engineering; Environmental Engineering & Management; Manufacturing Engineering; Energy Systems Engineering; Chemical Engineering; Coal Engineering; Industrial Engineering & Management; Mining Engineering; Metallurgy and Materials Engineering; English; Applied

Mathematics; Telecommunication Engineering & Management; Communication Systems and Networks; Information Technology; Telemedicine & e-Health Systems; Software Engineering; Embedded Systems Engineering; Biomedical Engineering; Computer & Information Engineering; Electrical Power Engineering; Electronic System Engineering; Mechatronics; Science, Technology and Innovation Policy; Technology and Innovation Management; Public Policy; Marketing; Finance; Operations Management; Human Resource Management and Innovation and Entrepreneurship. Some courses are offered full time during the day while others are conducted during evenings. The degrees to be awarded may be Master of Engineering (M.E), Master of Science (M.S), Master of Business Administration (MBA), Master of Philosophy (M.Phil) or Doctor of Philosophy (Ph.D); depending upon the quality and quantity of the research/work completed.

Post-graduate studies and research are organized by various departments as well as the following specialized institutes/directorates.

- 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

Message from the Vice Chancellor

It gives me immense pleasure to introduce you to a broad spectrum of our postgraduate programs offered at Mehran University of Engineering & Technology at Jamshoro & Shaheed Zulifiqar Ali Bhutto campus at Khairpur Mir's. Mehran University of Engineering & Technology being the leading seat of higher learning offering quality engineering, science & technology education to the rural and less developed areas of Pakistan on merit and at an affordable cost in an environment, where only intelligent and rich can have access to higher education in an highly ranked institutions of Pakistan.

My University is one of such universities that has highly qualified faculty from UK, USA, Japan, Germany, Austria, Denmark, China, Malaysia, South Korea, Turkey and many other countries. And it is exuberant in designing & developing the Master's program in various disciplines to meet the market demand at national & international level. For the purpose, faculty is always on their toes to work with faculty from developed countries.

International collaborations are one of the strength of Mehran University that supports the PhD program in various disciplines. The faculty members have join research with USA, UK, China, Turkey, Denmark and many other countries, where PhD students spend valuable time as part of their research work. From the high quality research at Mehran UET, the faculty & research students produced number of publications in impact factor & HEC recognized research journals.

The University cares its students with financial support through various incentives like bursary up to 50% in tuition fees, fully paid teaching assistantship in every program, fully funded PhD scholarships from endowment scheme. And scholarships including HEC indigenous and need based scholarships, National Bank of Pakistan- Student Loan Scheme, Erasmus Mundus scholarship opportunities to study under exchange program in Europe, PM's Tuition fee reimbursement scheme for less developed areas, Pakistan Engineering Council Scholarship.

I warmly welcome you for the 2014 postgraduate session. It would be delighting to have brilliant researchers coming here to discover their potential, value and competence in this well emergent institute.

Prof. Dr. Mohammad Aslam Uqaili

Vice Chancellor, Mehran UET

Postgraduate Academic Calendar 2016-2017

	SPRING-2016	FALL-2016
Date of Advertisement	31-01-2016	07-08-2016
Last date for form submission	26-02-2016	09-09-2016
Date of Entry test for ME/MS/MBA programs	03-03-2016	16-09-2016
Date of Entry test for PhD program	07-03-2016	19-09-2016
Announcement of results	10-03-2016	22-09-2016
Interviews	14-03-2016 to 18-03-2016	26-09-2016 to 30-09-2016
Last date of Admission	25-03-2016	07-10-2016

Semester Duration	
Teaching	16Weeks
Mid semester Examination	01 Week
Final semester Examination	05 Weeks
Total Semester Weeks	22 Weeks
Total Duration	
Two Semesters	22×2= 44 Weeks
Summer Vacation	06 Weeks
Winter Vacation	02 Weeks
Total	52 Weeks

Note:-

- Minimum attendance requirement to be eligible to appear in the semester examination is 75%.
- Minimum Number of contact hours for a theory subject of 3 credit hours or practical of 1 credit hour per semester shall be 42.
- Minimum Number of contact hours for a theory subject of 2 credit hours per semester shall be 28.

MORNING / EVENING Programs 16-Batch			
1st Semester (Spring -2016) / 2nd Semester (Fall-2016) / 3rd Semester (Spring-2016)		**1st Semester (Fall -2016) / 2nd Semester (Spring-2016) / 3rd Semester (Fall-2017)**	
Date of Start of classes	28-03-2016	Date of Start of classes	10-10-2016
Conduct of Mid semester examination	23-05-2016	Conduct of Mid semester examination	05-12-2016
Summer Vacation: 04-06-2015 to 17-07-2016			
Date of Start of classes after summer vacation	18-07-2016	Date of Start of classes after winter vacation	02-01-2017
Date of Suspension of classes	09-09-2016	Date of Suspension of classes	24-02-2017
Schedule of Examination	12-09-2016	Schedule of Examination	27-02-2017
Display of Sessional marks	16-09-2016	Display of Sessional marks	03-03-2017
Examination preparation up to	18-09-2016	Examination preparation up to	05-03-2017
Conduct of Final semester examination	19-09-2016	Conduct of Final semester examination	06-03-2017
Announcement of result (Expected)	07-11-2016	Announcement of results (Expected)	21-04-2017

Directorate of Postgraduate Studies

1. DIRECTORATE OF POST GRADUATE STUDIES

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.

1 Masters in Architecture
2 ME in Chemical Engineering
3 Masters in City and Regional Planning (MCRP)
4 ME in Civil Engineering
5 ME in Construction Management
6 ME Geotechnical and Highway Engineering
7 ME in Structural Engineering
8 ME in Energy System Engineering
9 ME in Industrial Engineering and Management
10 ME in Manufacturing Engineering
11 ME in Metallurgy and Materials Engineering
12 ME in Mining Engineering
13 ME in Textile Engineering
14 MS in English Linguistic
15 MPhil in Applied Mathematics

1.1 Masters in Architecture

1.1.1 OBJECTIVES

The objective of this Master's Degree course is to provide advanced studies in the field of Architecture. The course is specially design to meet the requirements of modern day Architectural practices. The architects who are working in the field or working as professional in various government and non-government organization will be able to enhance their professional skills to meet the growing needs of the field. It will also help the teachers and students who are involved in research and also want to enhance their studies to a doctorate level.

Moreover, after completion of this course the candidates shall be able to resolve the diversified issues faced during undertaking tasks in the field of Architecture and built environment.

1.1.2 ACADEMIC STAFF

1.	Dr Bhai Khan Shar B.Arch (MUET). PhD(UK)	Professor
2.	Mr Jawed Makhdoom B.Arch(MUET) M.Arch(UK)	Assistant Professor
3.	Ms Shahneela B.Arch(MUET), M. E. (MUET)	Assistant Professor
4.	Ms. Raheela B.Arch (MUET) M.E (MUET)	Assistant Professor
5.	Mr. Tariq Ali Shah B. Arch (DCET) M. Arch(UK)	Visiting Faculty

1.1.3 STUDIOS AND LABORATORIES

1. Design Studios
2. Model Making Lab
3. Environmental Lab
4. Surveying Lab
5. Computer Lab
6. Photographic Lab

1.1.4 COURSES OFFERED

S.No	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Advanced Architectural Design-I	3 – 0	100
2	Green Architecture Concepts & Applications	3 – 0	100
3	Interaction of Social and Built Environment	3 – 0	100
	SECOND SEMESTER		
4	Advanced Architectural Design-II	3 – 0	100
5	Conservation and preservation of Architectural Heritage	2 – 0	50
6	Advanced Landscape Design	2 – 0	50
7	Regulatory Consideration in Architectural Applications	2 – 0	50
	THIRD SEMESTER		
11	Project Planning and Implementation	3 – 0	100
12	Architectural Construction, services & Technology	3 – 0	100
	Urban and Community Design	3 – 0	100
	FOURTH SEMESTER		
13	Thesis Project	6	

1.2 Chemical Engineering

1.2.1 INTRODUCTION

The Postgraduate Program in Chemical Engineering Department started in 1980. The Syllabus is revised periodically and some new courses of market orientation are introduced. Five PhDs have been produced and five more PhD students are registered in the department. The Department has developed the linkage programs with the two British Universities (Brunel University West London, UK and Exeter University London, UK) and one American University (University of Arizona, USA) for Faculty Development and Research. The HEC-BC higher education linkage program with the Brunel University UK is on "Waste Treatment & Management" and the other linkage program is on "Capacity Development on Water Demand Management" with the Exeter University UK which is funded through the DelPHE project. Research students were registered for the degree of PhD through these programs. Currently, through Pak-US Joint Academic and Research program (2009-2012), the Chemical Engineering Department of MUET has developed partnership with Institute of Chemical and Environmental Engineering, University of Arizona, USA to conduct research on treatment of ground water by using the Iron Ore for removal of arsenic.

1.1.2 ACADEMIC STAFF

The following academic staff is engaged for teaching courses in the Chemical Engineering Department.

1.	Dr. Syed Farman Ali Shah B.E, M.E, Ph.D (MUET)	Professor & Chairman
2.	Dr. Khadija Qureshi B.E, M.E, Ph.D (MUET)	Professor
3.	Dr.Suhail Ahmad Soomro B.E (MUET), M.Sc (U.K), Ph.D (MUET)	Professor
4.	Dr. Shaheen Aziz B.E, M.E, Ph.D (MUET)	Professor
5.	Dr. Inamullah Bhatti B.E, M.E, (MUET), Ph.D (Malaysia)	Professor
6.	Dr. Abdul Rehman Memon B.E, M.E (MUET), PhD (UK)	Associate Professor
7.	Engr. Ashfaque Hussain Pirzada B.E, M.E (MUET)	Assistant Professor
8.	Dr. Zeenat M. Ali B.E, M.E, PhD (MUET)	Assistant Professor
9.	Dr. Aziza Bano B.E (MUET), M.E (NED)	Assistant Professor

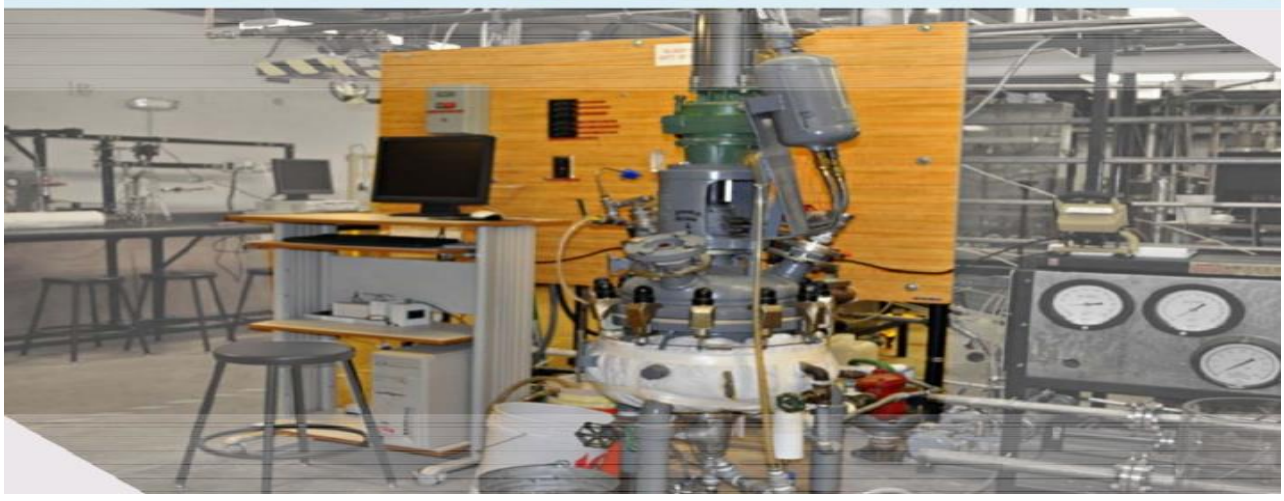
10.	Engr. Manzoor Ul Haq Rajput B.E, M.E (MUET)	Assistant Professor
11.	Engr. Khan Muhammad Qureshi B.E, M.E (MUET)	Assistant Professor (On study leave)
12.	Engr. Zulfiqar Ali Bhatti B.E, M.E (MUET), M.Sc. (UK)	Assistant Professor (On study leave)
13.	Engr. Imran Nazir Unar B.E, M.E, (MUET)	Assistant Professor (on study Leave)
14.	Engr. Sikandar Mustafa Almani B.E, M.E, (MUET)	Lecturer
15.	Engr. Aisha Kausar Efendi B.E, M.E, (MUET)	Lecturer
16.	Engr. Zulfiqar Ali Solangi B.E, M.E, (MUET)	Lecturer

1.2.3 LABORATORIES

1. Analytical Chemistry Laboratory
2. Biochemical Engineering Laboratory
3. Computer Laboratory
4. Environmental Engineering Laboratory
5. Fluid Mechanics Laboratory
6. General Chemistry Laboratory
7. Heat Transfer Laboratory
8. Instrumentation and Control Laboratory
9. Polymer Engineering Laboratory
10. Quality Control Laboratory
11. Unit Operations Laboratory

1.2.4 COURSES OFFERED

S.No	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Combustion Technology	2 – 0	50
2	Natural Gas Processing	2 – 0	50
3	Advance Transport Phenomena	3 – 0	100
4	Bio-processing and Food Technology	2 – 0	50
5	Energy Management	2 – 0	50
	SECOND SEMESTER		
6	Process Simulation Modelling and Particle Dynamics	3 – 0	100
7	Industrial Waste Management	2 – 0	50
8	Health Safety and Environment	2 – 0	50
9	Advanced Analytical Techniques and Research Methodology	3 – 0	100
10	Polymer Technology	2 – 0	50
	THIRD SEMESTER		
11	Reactor Design and Kinetics	3 – 0	100
12	Advanced Separation Processes and Membrane Technology	3 – 0	100
13	Thesis Project	6	



1.3 City and Regional Planning

1.3.1 INTRODUCTION

Planning is a discipline which is concerned with the forces that generate social development, locational change, and economic growth, and with understanding the ways in which these resources can be used. In order to meet the ever increasing demand for qualified planners, to provide better and healthy living environment to the people, to ensure planned growth and to control and guide planning activities in urban and rural areas of country a full-time three semester masters course is introduced in the field of City and Regional Planning. Keeping in view the baseline curriculum prepared by the National Curriculum Revision Committee constituted by the Higher Education Commission (HEC) the curriculum is designed to bring it in line with local, national and international requirements and to introduce innovation to ensure quality of education and uniformity of curriculum in the Pakistan Universities. The department also offers the degrees of Master of Philosophy and Doctor of Philosophy in the field of City and Regional Planning.

1.3.2 AIMS AND OBJECTIVES

This course aims to equip the new urban and regional professionals with the interdisciplinary and inter-professional skills required to meet the demands of a rapidly shifting urban regeneration agenda as well. Regeneration of cities is about creating innovative and lasting solutions to the social, economic and design problems faced by their complex communities. Those working in the field increasingly come from diverse professional backgrounds and require team-based approaches to problem solving.

Following are the main objectives of the programme:

1. To provide World-Class advanced education, knowledge and skills in the field of City and Regional Planning
2. To conduct outstanding basic technical and applied research in the field of City and Regional Planning profession
3. To provide professionals in various streams of specializations in City and Regional Planning.

1.3.3 ACADEMIC STAFF

1.	Dr. Imtiaz Ahmed Chandio B.CRP, PGD (MUET), MSc, PhD (Malaysia)	Assistant Professor and Chairman
2.	Dr. Bhai Khan Shar B.Arch. (MUET), PhD (UK)	Professor
3.	Dr. Mir Aftab Hussain Talpur B.CRP, M.E (MUET), PhD (Malaysia)	Assistant Professor
4.	Muhammad Masood B.Sc (Lahore), M.Sc. (AIT)	Assistant Professor
5.	Saima Kalwar B.CRP, M.Phil (MUET)	Assistant Professor (on Study Leave)

6.	Irfan Ahmed Memon B.CRP (MUET), MSc. (Malaysia)	Lecturer (on Study Leave)
7.	Noman Sahito B.CRP, MCRP (MUET)	Lecturer
8.	Dr. Dost Ali Khowaja B.E (MUET), Ph.D (UK)	Professor (Visiting Faculty)

1.3.4 LABORATORIES

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.

1.3.5 COURSES OFFERED

S.No	SUBJECTS	CREDIT HOURS	MARKS
FIRST SEMESTER			
1.	Planning Theory	3 – 0	100
2.	Regional Development Planning	3 – 0	100
3.	Urban Land & Real Estate Management	3 – 0	100
SECOND SEMESTER			
4.	Advanced Planning Techniques	3 – 0	100
5.	Planning Research Methods	3 – 0	100
6.	Urban Transportation Planning	3 – 0	100
THIRD SEMESTER			
7.	Comparative Urban Planning	3 – 0	100
8.	Infrastructure Planning	3 – 0	100
9.	Thesis	6	

1.4 Civil Engineering

1.4.1 OBJECTIVES

The Civil Engineering Department of Mehran University of Engineering and Technology is a well-established department, since 1967. This department has produced about 5000 civil engineers, who are serving the nation in important positions all over the country. It was decided in 1977 that post-graduate program be started to produce highly qualified manpower in some fields of civil engineering to cope up with specialized manpower requirements of the country. The first batch of postgraduate students was admitted in 1979. Pakistan being a developing country is totally relying upon scientific and technological development which is realizable only with the good quality of Engineering and Technological Education in the related fields. To acquire civil engineering education, with this perspective in mind, a variety of knowledge and skills are required, and these must be learned and tested through high standards. The following four postgraduate programs offered by the Department of Civil Engineering provide the potential Civil Engineers with the advanced knowledge and skills suitable to needs and aspirations of the country, contributing to the development in general and economic prosperity in particular.

1. ME in Civil Engineering
2. ME in Construction Management
3. ME in Geotechnical and Highway Engineering
4. ME in Structural Engineering

1.4.2 ACADEMIC STAFF

The following academic staff of the department of Civil Engineering is engaged for teaching the courses of the Masters Program in Civil Engineering

1.	Dr. Ghous Bux Khaskheli B.E (MUET), M.E (Sheffield), Ph.D (UK)	Meritorious Professor and Chairman
2.	Dr. Aneel Kumar B.E (MUET), M.E (AIT, Thailand), Ph.D (Japan)	Professor and Co-Chairman
3.	Dr. Muhammad Mahboob Gujarman B.E, P.G.D (MUET), Ph.D (China)	Professor
4.	Dr. Abdul Sami Qureshi B.E (MUET) Ph.D (Dresden)	Professor
5.	Dr. Tauha H. Ali B.E (MUET), M.E (Singapore), Ph.D (Australia)	Professor
6.	Dr. Rizwan Ali Memon B.E, M.E, Ph.D (MUET)	Professor
7.	Dr. Khalifa Qasim Laghari B.E, M.E, Ph.D (MUET)	Professor
8.	Dr. Nafees A. Memon B.E, P.G.D (MUET), Ph.D (Romania)	Professor
9.	Dr. Zubair A. Memon	Professor (On Lien)

	B.E, M.E (MUET), Ph.D (Malaysia)	
10.	Dr. Ashfaque A. Memon B.E, M.E, Ph.D (MUET)	Professor
11.	Dr. Kamran Ansari B.E (MUET), M.E (Malaysia), Ph.D (UK)	Professor (On Lien)
12.	Mr. Agha Faisal Habib B.E (MUET), M.E (AIT, Thailand), Ph.D (UK)	Professor
13.	Dr. Zaheer A. Almani B.E (MUET) M.E (Thailand), Ph.D (UK)	Professor
14.	Dr. Naeem Aziz Memon B.E (MUET) Ph.D (England)	Associate Professor
15.	Dr. Pervaiz A. Shaikh B.E, M.E, Ph.D (MUET)	Assistant Professor
16.	Mr. Jawed Kamal Ansari B.E, M.E (MUET)	Assistant Professor
17.	Mr. Ashfaque Pathan B.E, M.E (MUET)	Assistant Professor
18.	Mr. Arshad Ali Memon B.E, M.E (MUET)	Assistant Professor
19.	Dr. Fareed Memon B.E., M.E (MUET), Ph.D (Malaysia)	Assistant Professor
20.	Mr. Samar Hussain Rizvi B.E, M.E (NED)	Assistant Professor
21.	Mr. Amjad Ali Pathan B.E, M.E (MUET)	Assistant Professor (On Lien)
22.	Mr. Shabir Hussain Khahro B.E (MUET), M.E (Malaysia)	Lecturer (On Lien)
23.	Mr. Farhan Qureshi B.E, M.E (MUET)	Lecturer

1.4.2 LABORATORIES

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

1.4.3 COURSES OFFERED

The following courses are offered for the **Masters Program in Civil Engineering**.

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1.	Computer Methods in Civil Engineering	3 – 0	100
2.	Advanced Concrete Technology	3 – 0	100
3.	Highway Materials	3 – 0	100
4.	Advanced Soil Mechanics	3 – 0	100
	SECOND SEMESTER		
5.	Advanced Reinforced Concrete	3 – 0	100
6.	Principles of Construction Management	3 – 0	100
7.	Traffic Engineering	3 – 0	100
8.	Advanced Irrigation Engineering	3 – 0	100
	THIRD SEMESTER		
9.	Advanced Foundation Engineering	3 – 0	100
10.	Pre-stressed Concrete	3 – 0	100
	Thesis	6	

1.4.5 COURSES OFFERED

The following courses are offered for the **Masters Program in Construction Management**.

S.No	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Advanced Construction Project Management	3 – 0	100
2	Quality Management & Construction Performance	3 – 0	100
3	Construction and Building Economics	3 – 0	100
4	Resource Planning & Control	3 – 0	100
	SECOND SEMESTER		
5	Construction Safety Management	3 – 0	100
6	Engineering Contracts & Procurement Methods	3 – 0	100
7	Construction Equipment & Management	3 – 0	100
8	Construction Risk Management	3 – 0	100
	THIRD SEMESTER		
9	Human Resource Management	2 – 0	50
10	Research & Communication in Construction Management	2 – 0	50
11	Knowledge Management	2 – 0	50
12	Thesis	6	

1.4.6 COURSES OFFERED

The following courses are offered for the **Masters Program in Geotechnical and Highway Engineering**.

S.No	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1.	Advanced Soil Mechanics and 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.	Advanced Engineering Geology	2 – 0	50
8.	Transportation Planning and Policy	2 – 0	50
9.	Soil Dynamics and Earthquake Engineering	2 – 0	50
	THIRD SEMESTER		
10.	Pavement Maintenance & Rehabilitation	3 – 0	100
11.	Traffic Engineering	3 – 0	100
12.	Thesis	6	

1.4.7 COURSES OFFERED

The following courses are offered for the **Masters Program in Structural Engineering**.

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1.	Computer Applications in Structural Engineering	3 – 0	100
2.	Advanced Concrete Technology	3 – 0	100
3.	Pre-stressed Concrete	3 – 0	100
4.	Advanced Structural Analysis	3 – 0	100
	SECOND SEMESTER		
5.	Advanced Reinforced Concrete	3 – 0	100
6.	Soil Mechanics and Foundation Engineering	3 – 0	100
7.	Analysis and Design of Bridges	3 – 0	100
8.	Repair, Maintenance and Strengthening of Reinforced Concrete	3 – 0	100
	THIRD SEMESTER		
9.	Design of Tall Buildings	3 – 0	100
10.	Seismic Analysis and Design	3 – 0	100
	Thesis	6	

1.5 Energy Systems Engineering

1.5.1 INTRODUCTION

Energy is an essential ingredient for economic growth as well as for any strategy for improving the quality of life of human beings. Per capita energy consumption is considered as the index of socio-economic development. Pakistan is facing many energy challenges – a massive gap between demand and supply, low per capita energy consumption, depleting oil and gas reserves, rocketing energy prices, deterioration of the balance of payments situation due to high energy import bill, energy insecurity, inefficient use of energy, and energy related environmental concerns. These challenges are badly affecting the socio-economic conditions of people and the industrial development leading to increasing unemployment, poverty and hunger in the country. In order to face these challenges effectively and successfully, highly trained energy engineers are required to understand the local requirements, develop and implement the advances of science and technology to solve these problems and to ensure a very high degree of system reliability along with the utmost regard for the protection of our environment.

Pakistan lacks in qualified human resource in the form of energy engineers, scientists and professionals that could analyse energy related problems facing the country both at the macro and micro levels and synthesis value engineered solutions. A program of postgraduate studies and research leading to Master of Engineering, M.Phil or PhD in Energy Systems is developed for solving the problems of extracting, collecting and utilizing energy resources efficiently to satisfy human needs without destroying the environment. The courses have been designed with a view to establish relevance with the aforementioned problems and every effort is being made to arrive at the solutions of these problems through the teaching, research and practical training on projects.

The courses also serve the aim of developing knowledge and experience in the field of energy systems and management which is mainly required by WAPDA, KESC, AEDB, PPIB, HDIP, PCRET, SSGCL, SNGCL, OGDC, PPL etc. and private sector and other oil and gas exploration companies, Ministry of Petroleum and Natural Resources, Ministry of Climate Change, Ministry of Planning and Development, Federal Government of Pakistan and Ministry of Alternative Energy and Environment and other ministries of Provincial and Federal governments.

1.5.2 OBJECTIVES

- To make the students understand various types of energy sources, their resource potential, existing technologies to harness them, economics and energetic of these technologies, and their socio-cultural and environmental aspects.
- To develop knowledge among students about the nature and causes of energy crisis.
- To provide students with the necessary skills to harness various energy sources.
- To make the students understand the consequences of various energy-related policy measures.
- To enable students to apply alternative strategies towards solving the energy crisis and also to provide more energy for improvement in the quality of life of the large populations in developing countries as well as for desired growth of the economy.
- To make the students knowledgeable about the energy-environment nexus and enable them to evolve holistic solutions to ensure sustainability and affordability of energy resources.

1.5.3 ACADEMIC STAFF

1. Dr. Mohammad Aslam Uqaili — Meritorious Professor and Vice Chancellor
   B.E (NED), Ph.D (UK)

2. Dr. Hafiz-ur-Rehman Memon B.E (NED), Ph.D, Post-Doc (UK)	Meritorious Professor
3. Dr. Khanji Harijan B.E (MUET), Ph.D (MUET)	Professor
4. Dr. Rizwan Ahmed Memon B.E (MUET), M.E (Thailand), Ph.D (Hong Kong)	Professor
5. Dr. Suhail Ahmad Soomro B.E (MUET), M.Sc (UK), Ph.D (MUET)	Professor
6. Dr. Khan Muhammad Brohi B.E (MUET), Ph.D (Japan)	Professor
7. Dr. Syed Feroz Shah M.S (University of Sindh), Ph.D (China)	Professor
8. Dr. Shahin Aziz B.E., M.E., , Ph.D (MUET)	Professor
7. Dr. Pervez Hameed Shaikh B.E, M.E. (MUET), Ph.D (Malaysia)	Associate Professor
8. Engr. Abdul Ghafoor Memon B.E (MUET), M.E (NED)	Assistant Professor
9. Engr. Anwar Ali Sahito B.E (MUET), M.E (NED)	Assistant Professor
10. Engr. Mokhi Maan Chang B.E, M.E. (MUET)	Assistant Professor
11. Engr. Imtiaz Ali Memon B.E (MUET), M.E (NED)	Assistant Professor
12. Engr. Nayyar Hussain Mirjat B.E (MUET), M.E (NED)	Assistant Professor

ACADEMIC STAFF (SZAB CAMPUS, KHAIRPUR MIRS)

1. Engr. Agha Zafaruallah Pathan B.E (Sindh), M.Sc (Germany)	Professor (Focal Person)
2. Engr. Abdul Qadir Chang B.E (Sindh), M.E (MUET)	Professor
3. Prof. Dr. Hassan Ali Khan Durani B.E, M.E, Ph.D (MUET)	Professor
4. Dr. Sadiq Ali Shah B.E (QUEST), Ph.D (U.K)	Associate Professor
5. Engr. Muhammad Ali Abro B.E (MUET), M.E (NED)	Assistant Professor (On study Leave)
6. Engr. Shakir Ali Soomro B.E (MUET), M.E (NED)	Assistant Professor
7. Engr. Mujeeb Iqbal Soomro B.E (MUET), M.E (MUET)	Assistant Professor
Dr. Mohsin Ali Ph.D (Malaysia)	Assistant Professor
8. Engr. Aqeel Ahmed Bhutto B.E (MUET), M.E (MUET)	Lecturer
9. Engr. Sajjad Ali Mangi B.E (QUEST), M.E (NED)	Lecturer (On study Leave)

1.5.4 LABORATORIES

1. Energy Technology
2. Clean Energy
3. Fluid Mechanics
4. Thermodynamics
5. Heat Transfer
6. Power Systems
7. Power Electronics
8. High Voltage Engineering
9. Refrigeration and Air-Conditioning
10. Energy Systems Modelling and Simulation

1.5.5 COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1.	Fluid Flow and Heat Transfer	3 – 0	100

2.	Renewable Energy Systems	3 – 0	100
3.	Electricity Transmission, Distribution and Storage	3 – 0	100
4.	Energy Systems Modeling and Simulation	2 – 0	50
5.	Energy Systems Lab-I	0 – 1	50
SECOND SEMESTER			
1.	Clean Coal Technologies	2 – 0	50
2.	Combustion and Pollution Control	3 – 0	100
3.	Hydrogen Technologies and Fuel Cells	2 – 0	50
4.	Energy Systems for Buildings	3 – 0	100
5.	Energy Systems Lab-II	0 – 1	50
THIRD SEMESTER			
1.	Advanced Power Generation Systems	3 – 0	100
2.	Energy Economics and Management	3 – 0	100
3.	THESIS	6	

1.6 Industrial Engineering and Management

1.6.1 OBJECTIVES

Field of Industrial Engineering is one of the latest amongst the engineering disciplines. It deals with the design improvement and installation of integrated system of men, materials and machines, drawing upon specialized knowledge and skill of the mathematical, physical and social science and technology in conjunction with the principles and methods of engineering and design. Industrial Engineering is a very unique combination of Management and Engineering and in fact distinguishes it from other conventional engineering disciplines. The department is adequately provided with laboratories, equipment's and training facilities. The three well equipped laboratories viz. operations Research, Time and Motion study and Computer Aided Engineering Laboratories are being effectively utilized for practical/training purposes. Considering the importance of Industrial Engineering and Management at national and global level, it has been decided to upgrade the Department of Industrial Engineering and Management from Undergraduate to Postgraduate level. Development of courses and syllabi for postgraduate studies will provide high quality modern and job-oriented education in the field of Industrial Engineering and Management.

The emphasis has been placed on providing such courses as would fulfill the needs of both public and private sectors for providing high quality export oriented industrial goods under the stringent requirement of ISO 9000. The emphasis has also been placed on providing research facilities for conducting research in collaboration with industries for solving their development and operational problems and to meet their R&D needs. Presently, the graduates in Industrial Engineering are employed in various Governments, multinational and private organizations. The employment prospects of the graduates in this field will increase particularly because of the introduction of job-oriented curricula most suited for development and operation of industries.

1.6.2 ACADEMIC STAFF

1. Dr. Hussain Bux Marri — Professor and Chairman
   B.E, PGD (MUET), Ph.D, Post.Doc (UK)
2. Dr. Anwaruddin Tanwari — Professor
   B.E (MUET), Ph.D (UK)
3. Dr. Murlidhar — Professor
   B.E, M.E, Ph.D (MUET)
4. Dr. Abdul Salam Soomro — Professor
   B.E (MUET), M.E (AIT), Ph.D (MUET)
5. Engr. Aitbar Ali Abbasi — Associate Professor
   B.E, M.E (MUET)
6. Dr. Ghulam Yasin Shaikh — Associate Professor
   B.E, M.E (MUET)
7. Dr. Muhammad Saleh Jumani — Associate Professor
   B.E (MUET) M.E (Germany), Ph.D (UK)

8. Engr. Hafiz Karim Bux Indhar — Assistant Professor
   B.E, M.E (MUET)

9. Dr. Shakeel Ahmed Shaikh — Assistant Professor
   B.E, PGD (MUET), Ph.D (UK)

1.6.3 LABORATORIES

1. Computer Aided Engineering Laboratory.
2. Time & Motion Study Laboratories
3. Operations Research Laboratories

1.6.4 COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1.	Advanced Operations Research	3 – 0	100
2.	Business Forecasting	3 – 0	100
3.	Human Resource Management	3 – 0	100
4.	Quality Management System	3 – 0	100
	SECOND SEMESTER		
5.	Implementation of Computer Integrated Manufacturing	3 – 0	100
6.	Supply Chain Management	3 – 0	100
7.	Production System Design	2 – 0	50
8.	Entrepreneurship	2 – 0	50
9.	Organizational Behavior	2 – 0	50
	THIRD SEMESTER		
10.	Research Techniques	2 – 0	50
11.	Engineering Economy	2 – 0	50
12.	Rapid Manufacturing Techniques	2 – 0	50
13.	Thesis	6	

1.7 Manufacturing Engineering

1.7.1 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. Manufacturing Engineering produces engineering technologists who understand and can apply established scientific and engineering knowledge and methods in combination with technical skills of modern technology to support engineering activities. Career fields include development and testing of new products, so it is a multidisciplinary field including elements of mechanical engineering, Industrial engineering, 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 course 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.

1.7.2 OBJECTIVES

- 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 related activities.
- To produce graduates who contribute in the profitable growth of manufacturing businesses.
- Maintain high standards of professional and ethical responsibility.

1.7.3 ACADEMIC STAFF

1. Dr. Dur Muhammad Pathan B.E, Ph.D (MUET)	Professor & Chairman
2. Dr. Mujeeb-u-ddin Memon B.E (MUET), Ph.D (UK)	Meritorious Professor (On Lien)
3. Dr. Khanji Harijan B.E, Ph.D (MUET)	Professor

4. Dr. Jawaid Daudpoto — Professor
   B.E, Ph.D. (UK)

5. Dr. Abdul Fatah Abbasi — Professor
   B.E, Ph.D (MUET)

6. Engr Jamil Hussain Khaliqdina — Associate Professor
   B.E, M.E (MUET)

7. Dr. Tanweer Hussain — Associate Professor
   B.E (MUET), Ph.D (UK)

8. Dr. Zeeshan Ali — Associate Professor
   B.E (UET Peshawar), Ph.D (UK)

8. Dr. Shakil Ahmed Shaikh — Assistant Professor
   B.E (UET Peshawar), Ph.D (UK)

10. Engr. Abdul Samad Memon — Assistant Professor
    B.E, M.E (MUET)

11. Muhammad Atif Khan Qaim Khani — Assistant Professor
    B.E, M.E, (N.E.D)

12. Imtiaz Ali Memon — Assistant Professor
    B.E (MUET), M.E (N.E.D)

13. Dr. Saifullah Samo — Assistant Professor
    B.E, M.E (MUET), PhD (China)

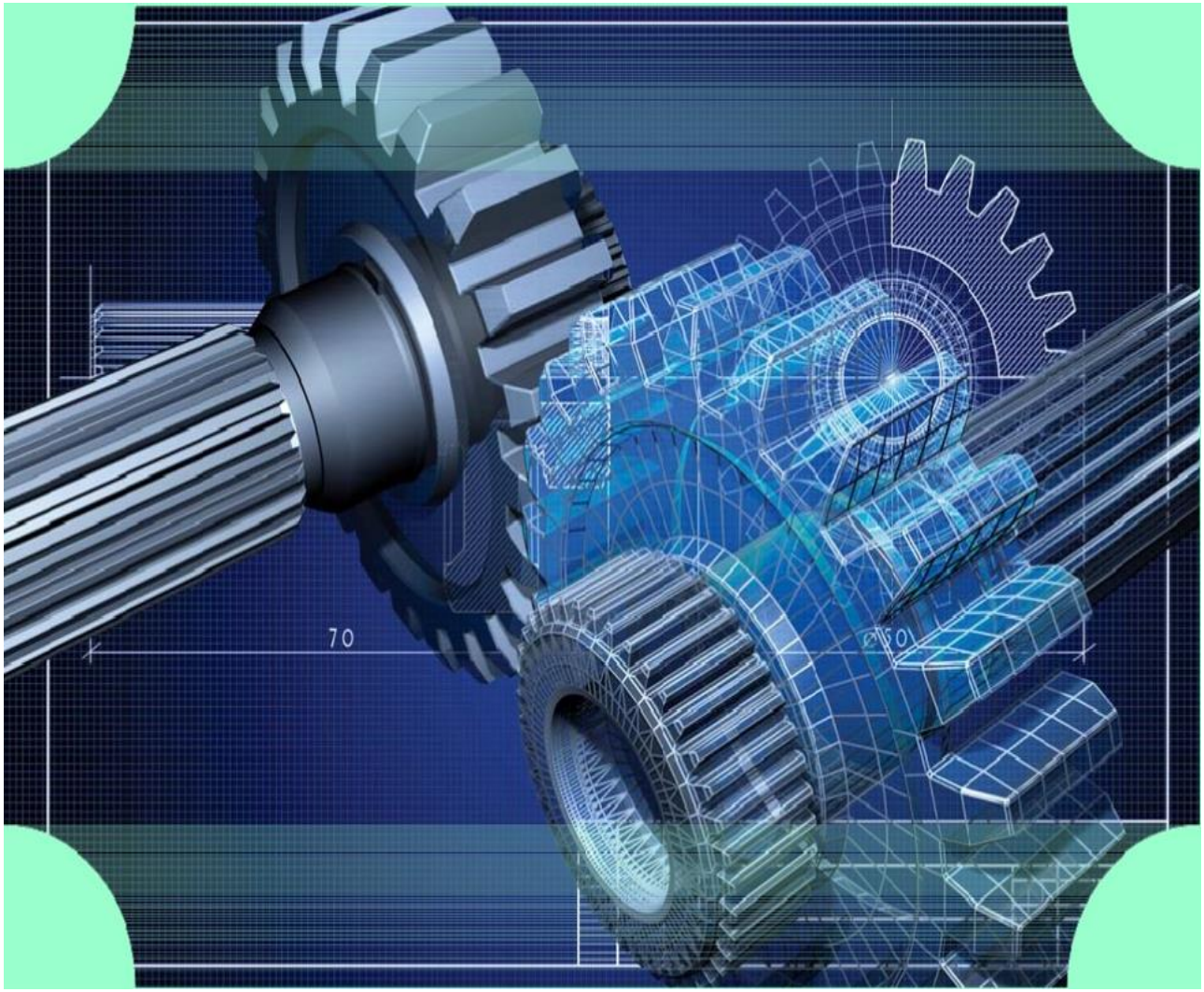
1.7.4 LABORATORIES

1. CAD/CAM laboratory
2. Heat Transfer laboratory
3. Material Testing laboratory
4. Mechanics of Machine laboratory
5. Engineering Mechanics laboratory
6. Thermodynamics laboratory
7. Mechanical Workshop

1.7.5 COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Advance Materials Engineering	3 – 0	100
2	Advance Manufacturing Process	3 – 0	100
3	Computer Aided & Integrated Manufacturing	2 – 1	50 - 50
4	Production Engineering & Management	3 – 0	100

SECOND SEMESTER			
5	Quality Control & Reliability	3 – 0	100
6	Automation & Control	2 – 1	50 – 50
7	Design for Manufacturing and Assembly	3 – 0	100
8	Green Manufacturing	2 – 0	50
THIRD SEMESTER			
9	Manufacturing Metrology & Precision Engineering	2 – 0	50
10	Industrial Ergonomics	2 – 0	50
11	Occupational Health and Safety	2 – 0	50
12	Thesis	6	



1.8 Metallurgy and Materials Engineering

1.8.1 OBJECTIVE

Department of Metallurgy and Materials Engineering is known as the world-wide leader of its field, based on its academic program, its highly regarded faculty, and the high caliber of its students. Its continuing record of pioneering advances in engineering materials stems from its ability to relate new developments and advances to engineering practice and its close relationship with industry. These advances are then incorporated in current teaching and research programs. Faculty and student research ranges from the purely scientific to applied studies and involves perspectives of chemistry, physics, electronics, the artistic and historical aspects of materials, design, and entrepreneurial ventures. Interests within the Department span the entire materials cycle from mining and refining of raw materials, to production and utilization of finished materials, and finally to disposal and recycling. There is a rich variety of problems of vital importance to the development of the science of metals, polymers, ceramics, glasses, electronic materials, biomedical materials, composites, and other materials awaiting solution. The Department has the theoretical and experimental resources available to attack these scientific and engineering problems successfully.

1.8.2 ACADEMIC STAFF

1.	Prof. Dr. Muhammad Moazam Baloch B.E (MUET), Ph.D (UK)	Professor and Chairman
2.	Dr. Muhammad Ishaque Abro B.E, M.E, Ph.D (MUET)	Professor
3.	Mr. Sikandar Ali Memon B.E, M.E(MUET)	Assistant Professor
4.	Mr. Riaz Memon B.E, M.E (MUET)	Assistant Professor
5.	Mr. Nisar Ahmed Memon B.E, M.E (MUET)	Assistant Professor
6.	Mr. Muhammad Wasim Akhtar B.E (MUET), M.E (NED) (on study leave abroad)	Lecturer
7.	Mr. Umair Aftab B.E, M.E(MUET)	Lecturer

1.8.3 LABORATORIES

1. Heat Treatment lab
2. Material Testing lab
3. Fabrication lab
4. Metallography lab
5. Electroplating lab
6. Sand Testing lab
7. Computer lab
8. Nano-Material
9. Characterization Lab

1.8.4 COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
FIRST SEMESTER			
1.	Advanced Materials	3 – 0	100
2.	Extractive Metallurgy	3 – 0	100
3.	Corrosion: Preventation and Controll	2 – 0	50
4.	Modeling and Computational Method	3 – 0	100
SECOND SEMESTER			
1.	Phase Transformation	3 – 0	100
2.	Mechanical Behavior of Materials and Failure analysis	3 – 0	100
3.	Welding and Joing Process	2 – 0	50
4.	Manufacturing Technology	3 – 0	100
THIRD SEMESTER			
1.	Advanced Characterization Techniques	3 – 0	100
2.	Thesis	6	

1.9 Mining Engineering

1.9.1 INTRODUCTION

Pakistan is endowed by nature with plenty of mineral wealth, which must be profitably exploited to enhance national wealth and inculcate self-reliance. About fifty types of such useful minerals are known to exist in Pakistan including petroleum products, coal, copper, chromium and precious stones. It is an umbrella field that involves many of the other engineering disciplines as applied to extracting and processing minerals from a naturally occurring environment. The need for mineral extraction and production is an essential activity of any technically proficient society. As minerals are produced from within a naturally occurring environment, disturbance of the environment as a result of mineral production is a given. Modern mining engineers must therefore be concerned not only with the production and processing of mineral commodities, but also with the mitigation of damage or changes to an environment as a result of that production and processing. The two primary types of mines are underground mines and open-pit mines. Minerals that exist mostly underground (eg. coal, gold. etc.) are generally recovered using the underground mining process. Minerals like iron ore, limestone, manganese ore, etc. are mostly recovered from the surface downwards in open cast mining. Engineering disciplines that are closely related to mining engineering are: Civil engineering Environmental engineering, Geotechnical engineering, Hydraulic engineering, and Electrical engineering.

1.9.2 ACADEMIC STAFF

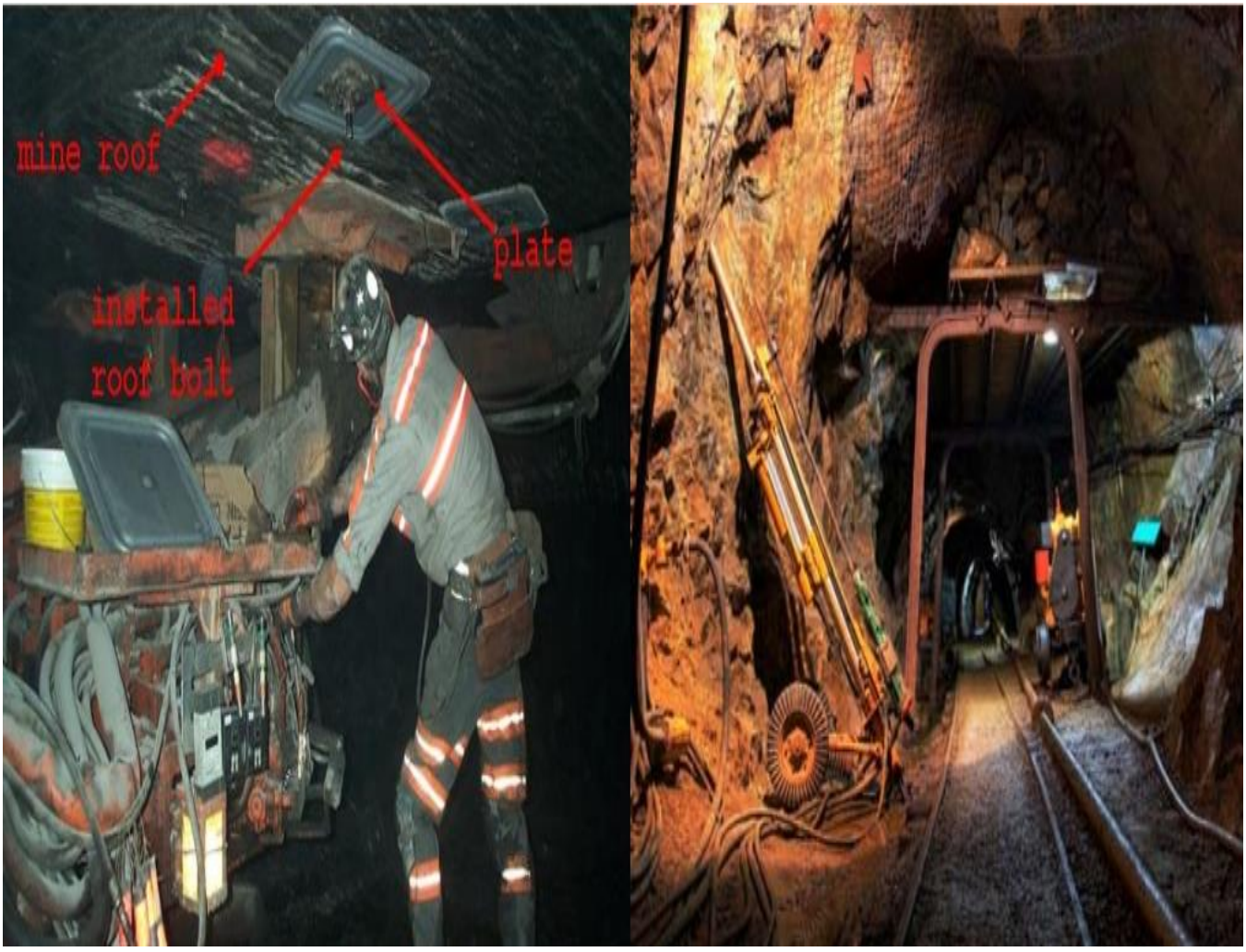
1.	Dr. Abdul GhaniPathan B.E (MUET), Ph.D (UK)	Professor
2.	Engr. Muhammad Yakoob Behan B.E, M.E (MUET)	Assistant Professor
3.	Engr. Sikandar Ali Channa B.E, M.E (MUET)	Assistant Professor
4.	Engr. Fahad Irfan Siddiqui B.E, (MUET), M.S (Malaysia)	Assistant Professor (on study leave)
5.	Engr. Safiullah Memon B.E, M.E (MUET)	Assistant Professor
6.	Engr. Munawar Ali Pinjaro B.E, M.E (MUET)	Lecturer (on study leave Abroad)
7.	Engr. Ghulam Raza Halepota B.E (Sindh), P.G.D (Austria), M.Phil (U.K)	Professor (Visiting Faculty)

1.9.3 LABORATORIES

1. Advance Research Laboratory
2. Rock Mechanics Laboratory
3. Mineral Processing Laboratory
4. Computer Laboratory

1.9.4 COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1.	Rock Mechanics Design	3 – 0	100
2.	Design and Control of Mine water	3 – 0	100
3.	Advanced Drilling and Blasting	3 – 0	100
4.	Advanced Mineral Processing	2 – 0	50
	SECOND SEMESTER		
1.	Open Pit Mine Planning and Design	3 – 0	100
2.	Coal Preparation	2 – 0	50
3.	Computer Aided Mine Planning and Design	2 – 0	50
4.	Mine Environments	2 – 0	50
	THIRD SEMESTER		
1.	Modern Mine Management	3 – 0	100
2.	Mine Cost Analysis and Control	2 – 0	50
3.	Thesis	6	



1.10 Textile Engineering

1.10.1 INTRODUCTION

The Department of Textile Engineering was established in 1993 for undergraduate program (i.e. Bachelor of Engineering in Textile). The aim of the department is to impart students with the knowledge and skills in the field of textile manufacturing and processing as per international standards, so that, after graduation, students could contribute towards needs, development and modernization of Pakistan's Textile Industry and Services. This department is the first Textile Engineering institute in Sindh Province and Pakistan's first recognized institute by Pakistan Engineering Council. After WTO regulations implementation and increasing global trading competition, the textile industry needed to have highly qualified research oriented and technically skilled personnel, who could improve and optimize the quality and production of textile products. Therefore, this department started Master of Engineering in Textile Engineering in 2008. The curriculum of this program is based on the advanced and research oriented courses and contents in order to meet following objectives.

1.10.2 OBJECTIVES

The Master of Textile Engineering program offers the higher education to impart students with

- advanced knowledge and skills in the field of textile manufacturing, processing and product development
- research and development skills useful for improving and optimizing the quality and production of textile products
- skills of process and machinery development for improving the economy and ecology of manufacturing, processing and product development
- skills required to undertake doctorate level studies

1.10.3 ACADEMIC STAFF

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

1. Dr. Mazhar Hussain Peerzada — Associate Professor and Chairman
   B.E (MUET), Ph.D (UK)
2. Prof. Dr. Rafique Ahmed Jhatial — Professor
   B.E (MUET), Ph.D (UK)
3. Dr. Awais Khatri — Associate Professor
   B.E (MUET), Ph.D (Australia)
4. Dr. Noorullah Soomroo — Assistant Professor
   B.E (NED), Ph.D (Turkey)
5. Dr. Uzma Syed — Assistant Professor
   B.E (MUET), Ph.D (UK)
6. Dr. Farooq Ahmed — Assistant Professor
   B.E, Ph.D (MUET)
7. Dr. Zeeshan Khatri — Assistant Professor
   B.E, M.E (MUET), Dr. Eng. CText ATI; CCol ASDC

8. Dr. Shamshad Ali — Assistant Professor
   B.E, M.E (MUET), PhD (South Korea)

9. Engr Raja Fahad Qureshi — Assistant Professor
   B.E, M.E (MUET) — (On Study Leave)

10. Engr Sanam Irum Memon — Assistant Professor
    B.E, M.E (MUET) — (On Study Leave)

11. Engr Iftikhar Ali — Assistant Professor
    B.E, M.E (MUET) — (On Study Leave)

12. Engr Alvira Iftikhar — Lecturer
    B.E, M.E (MUET) — (On Study Leave)

1.10.4 LABORATORIES

1. Yarn Manufacturing Laboratory
2. Weaving Laboratory
3. Wet Processing Laboratory
4. Knitting Laboratory
5. Garments Laboratory
6. Textile Testing & Quality Control Laboratory
7. Color Measuring & Microscopy Laboratory
8. Textile Composites Laboratory
9. Nano Materials Laboratory
10. Computer Laboratory

1.10.5 COURSES OFFERED

S. 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
	THIRD SEMESTER		
10	Clothing Construction Engineering	2 – 0	50
11	Knitted Fabric Engineering	2 – 0	50
12	Textile Standard and Methods	2 – 0	50
13	Thesis	6	

1.11 Coal Research & Resource Center (CRRC)

1.11.1 Introduction

The "Coal Research & Resource Center" was established at Mehran University of Engineering & Technology in 2014. There was an urgent need to establish the center in the province of Sindh in specific and Pakistan in general to support the emerging "Coal Industry", where they can access the Lab. facilities to facilitate their businesses to support the government policies to exploit the indigenous coal resources. In addition, integrated research faculties was also not available under one umbrella, where researchers from mining, chemical, mechanical, electrical, environmental & other allied disciplines of engineering & sciences work together on the coal resources & utilization for the economic development of Pakistan.

The center housed state of art research facilities to facilitate the PhD research students in the area of coal mining, modeling & simulation; coal processing & preparation; clean coal & coal conversion technologies, process modeling and simulation; Coal based power plants; emission analysis & control technologies.

1.11.2 Program offered

- PhD Coal Engineering

Academic Staff:

The following academic staff is engaged in the Coal Research and Resource Centre.

- **Prof. Dr. Mohammad Aslam Uqaili**
  Department of Electrical Engineering
- **Prof. Dr. Abdul Ghani Pathan**
  Department of Mining Engineering
- **Prof. Dr. Khanji Harijan**
  Department of Mechanical Engineering
- **Prof. Dr. Suhail A. Soomro**
  Department of Chemical Engineering
- **Prof. Dr. Shaheen Aziz**
  Department of Chemical Engineering
- **Prof. Dr. Rasool Bux Mahar**
  Institute of Environmental Engineering & Management

1.12 English Linguistics

1.12.1 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:

- familiarity with the issues currently at the forefront of research in English Language Teaching/Applied Linguistics;
- an understanding of how theory relates to practice;
- a broader view of the links between classroom activity and approaches to program design, teacher training and management decisions;
- comprehensive skills to conduct research in the field;
- the opportunity to extend professional experience by working with others from different educational and language backgrounds

1.12.2 ACADEMIC STAFF

The following academic staff of the English Language Development Centre is engaged into teaching of the MS in Linguistics courses:

1.	Dr. Habibullah Pathan M.A. Hons., M. Ed. ELT (UK), PhD (UK)	Associate Professor (On Lien)
2.	Ms Quratul Ain Mirza M.A., MPhil (Iqra University)	Assistant Professor and In-charge Director
3.	Ms Sahib Khatoon, M.A., MPhil (Iqra University)	Assistant Professor
4.	Mr Shoukat Ali Lohar, M.A., MPhil (Iqra University)	Assistant Professor
5.	Dr Natasha Memon	Assistant Professor (Contract)
6.	Dr Shumaila Memon	Assistant Professor (Visiting)
7.	Ms. Rosy Ilyas M. Ed. TESOL (UK)	Assistant Professor and In-charge Director

1.12.3 LABORATORIES

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

1.12.4 COURSES OFFERED

The following postgraduate courses are offered by the English Language Development Centre for MS in English Linguistics program.

S.No.	SUBJECTS	CREDIT HOURS	MARKS
FIRST SEMESTER			
1.	Research Methodology in Linguistics	3 – 0	100
2.	Applied Linguistics	3 – 0	100
3.	Globalization & Spread of English	3 – 0	100
4.	Teaching and Researching Motivation	3 – 0	100
SECOND SEMESTER			
5.	Theories of Language Description	3 – 0	100
6.	Issues in Syntax	3 – 0	100
7.	English for Specific Purpose (ESP)	3 – 0	100
8.	Computational Linguistics	3 – 0	100
THIRD SEMESTER			
9.	Language Assessment	3 – 0	100
10.	Teaching and Learning English in Large Classes	3 – 0	100
11.	Thesis	6	

1.13 Applied Mathematics

1.13.1 OBJECTIVES

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. Historically, mathematics was first applied with great success in astronomy and mechanics. Then it developed into a main tool of physics, other physical sciences, and engineering. Now it is also important in the biological, geological, and social sciences as well. With the advancement of the computer, applied mathematics has transcended its traditional style and now assumes an even greater importance and a new vitality.

Comparing with the pure mathematician, the applied mathematician is more interested in problems coming from other fields, with the engineer and the physical scientist, he or she is more concerned with the formulation of problems and the nature of solutions, with the computer scientist, he or she is more concerned with the accuracy of approximations and the interpretation of results. Needless to say, even in this age of specialization, the work of mathematicians, scientists, and engineers frequently overlaps. 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.

The department is first time offering admission in M.Phil in Applied Mathematics. This degree is compatible with the engineering disciplines. The department is also running Ph.D degree program since 2013. The M.Phil in Applied Mathematics program is a full-time eighteen months course and research on term basis. Research is an essential component of the academic pursuits of the faculty members and the postgraduate students. The work of the faculty is published in national and international journals. The department has recently established a research center in the department to accommodate and motivate the scholars for carrying out research with enthusiasm.

1.13.2 ACADEMIC STAFF

The following academic staff of the DEPARTMENT OF BASIC SCIENCES AND RELATED STUDIES is engaged for teaching the courses of the MPhil in Applied Mathematics.

1.	Dr. Muhammad Anwar Solangi Ph.D (MUET)	Professor and Chairman
2.	Dr. Syed Feroz Shah Ph.D (China)	Professor
3.	Dr Asif Ali Shaikh Ph.D (University of Sindh)	Associate Professor
4.	Abdul Saleem Memon M. Phil (Sindh University)	Assistant Professor
5.	Muhammad Urs Jhatial M. Phil (Sindh University)	Assistant Professor
6.	Sania Qureshi M. Phil (Sindh University)	Assistant Professor

7. Zaib-un-Nisa Memon — Assistant Professor
M. Phil (Sindh University)

1.13.3 LABORATORIES

1. Computer laboratory

1.13.4 COURSES OFFERED

Following postgraduate courses are offered by the Department of Basic Sciences and Related Studiesfor the M.Phil Program in Applied Mathematics.

S.No	SUBJECTS	CREDIT HOURS	MARKS
	FIRST TERM		
1.	Scientific Computing	3 – 0	100
2.	Advanced Differential Equations	3 – 0	100
3.	Computational Fluid Dynamics	3 – 0	100
4.	Advanced Linear Algebra	3 – 0	100
	SECOND TERM		
5.	Applied Statistics	3 – 0	100
6.	Finite Element Analysis	3 – 0	100
7.	Operations Research and Optimization	3 – 0	100
	THIRD TERM		
8.	Modeling and Simulation	3 – 0	100
9.	Thesis	6	

INSTITUTE OF PETROLEUM AND NATURAL GAS ENGINEERING

2. INSTITUTE OF PETROLEUM AND NATURAL GAS ENGINEERING

2.1 AIMS AND OBJECTIVES

The Institute of Petroleum & Natural Gas Engineering was established in 1996 in order to encourage postgraduate studies and research. The aims and objectives of the Institute are to engage advance teaching and researches leading to ***ME*** and ***Ph.D.*** 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 sector.

The main emphasis at the Institute is on the advance courses in the following highly potentials areas:

(i) Oil-Gas Well Drilling and Production
(ii) Production Optimization
(iii) Reservoir Estimation and Management
(iv) Reservoir Modeling & Simulation

2.2 ACADEMIC STAFF

1.	Dr. Suhail A. Soomro B.E, MSc (UK), PhD	Professor & Director
2.	Dr. Hafiz-ur-Rehman Memon B.E (N.E.D), Ph.D, Post-Doc (UK)	Meritorious Professor
3.	Dr. Abdul Haque Tunio B.E, Ph.D (MUET)	Professor (on lien)
4.		
5.	Engr. Shahzad Ali Baladi B.E, M.E (MUET)	Assistant Professor
6.	Engr. Muhammad Khan Memon B.E, M.E (MUET)	Assistant Professor (On Study Leave)
5.	Engr. Khalil Rehman Memon B.E (MUET), M.E (Malaysia)	Assistant Professor

VISITING STAFF

1. Dr. Abdul Majeed Shar	Assistant Professor, Petroleum Engineering Department, NED UET, Karachi

2. Dr. Saleem Qadir Tunio	Assistant Professor, Petroleum Engineering Department, DUET, Karachi
3. Professor Dr. Sarfraz Hussain Solangi	Centre of Excellence Pure and Applied Geology University of Sindh

2.3 COURSES OFFERED

S.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	Petroleum Reservoir Simulation	3 – 0	100
SECOND SEMESTER			
5	Enhanced Oil Recovery	3 – 0	100
6	Well Performance	3 – 0	100
7	Advanced Well Log & Interpretation	3 – 0	100
8	Gas Processing	3 – 0	100
THIRD SEMESTER			
9	Reservoir Engineering Management	2 – 0	50
10	Well Stimulation Design	2 – 0	50
11	THESIS	6	

2.4 RESEARCH AREAS

Candidates are required to undertake a specific project on any topic related to the field. The emphasis will be on the following area:

(i) Drilling Engineering
(ii) Reservoir Engineering
(iii) Well Stimulation & Testing
(iv) Production Optimization
(v) Enhanced/Improved Oil Recovery
(vi) Drilling Fluids

2.5 LABORATORIES

(i) Drilling & Reservoir Simulation Lab.
(ii) Petroleum Refinary Lab.
(iii) Production & Drilling Fluids Lab
(iv) Oil Well Testing & Gas Engineering Lab

(v) Computer Lab

2.6 SEMINAR LIBRARY

The Institute also has a seminar library available in its premises which provides the option of latest publications of books, journals, research reports in the field of Petroleum Engineering.

INSTITUTE OF
INFORMATION AND COMMUNICATION TECHNOLOGY

3. INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGY

Following six departments come under the Institute of Information & Communication Technologies:

1. Bio-Medical Engineering
2. Computer Systems Engineering
3. Electronic Engineering
4. Electrical Engineering
5. Software Engineering
6. Telecommunication Engineering

3.1 Department of Bio-Medical Engineering

Mehran university of Engineering and Technology has got the privilege to establish the Biomedical Engineering Department for the first time in the history of all Public sector universities of Pakistan. Technological innovation in the field of medicine and healthcare is accelerating at enormous pace. A modern hospital is now the center of a technologically sophisticated healthcare system. Keeping in view the tremendous growth of Biomedical Sector and Tele-Medicine in the country, there is great scope and need of Biomedical Engineers, Experts and Solution Providers. Biomedical engineering uses engineering principles to enable us to understand, modify or control biological systems. In practice, it involves everything from equipment for diagnosis and patient monitoring through implants such as pacemakers, artificial joints and limbs to the computer simulation of biological functions. All these modern aids to healthcare have to be conceived, designed, tested, manufactured, installed, operated, maintained and improved. This is the job of Biomedical Engineers. The world market for all biomedical devices, including diagnostic and therapeutic equipment, is in the range of $100 billion/year. It is destined to grow even further, especially in areas that have aging populations. Biomedical engineers will be of increasing importance to this growth. It is an inter-disciplinary and applied branch of electronic engineering, material as well as mechanical engineering, which requires a working knowledge such as physiology, human anatomy and biological sciences. This department offers Master of Engineering degree in Biomedical Engineering.

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 Lab
- Biomedical Sciences Lab
- Biomedical Engineering Lab
- Biomedical Instrumentation Lab
- Telemedicine and Research Lab

3.2 Department of Computer Systems Engineering

Computer Systems Engineering is a discipline that integrates fields of Electrical Engineering and Computer Science required to develop Computer Systems. Computer Engineers usually have training in Electronic Engineering, software design, and hardware-software integration instead of only Software Engineering or Electronic Engineering. Computer Engineers are involved in many hardware and software aspects of computing, from the circuit design of individual microprocessors, personal computers, and supercomputers, to latest development of communication systems and networks. Therefore, this field of engineering not only focuses on how computer systems work themselves, but also how they integrate into the larger picture.

Usual tasks involving Computer Engineers include writing software and firmware for embedded microcontrollers, designing analogue sensors, designing mixed signal circuit boards, and designing operating systems. Computer Engineers are also suited for robotics research, which relies heavily on using digital systems to control and monitor electrical systems like motors, communications, and wireless sensors. Computer Engineers can concurrently design hardware, software, firmware, and manage all forms of computer, information and management systems used in industry. The department offers a carefully designed multidisciplinary courses and degree programs.

In the Computer Systems Engineering department, students are trained to perform in-depth study because the full breadth of knowledge used in the design and application of computers is required to compete in the international market. This department offers Master of Engineering in Computer and Information Engineering. The department also offers master of engineering program in Information Technology in collaboration with the department of Telecommunication Engineering.

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

- Computing I and II Labs
- Microprocessor Applications and Robotics Lab
- Digital Image Processing Lab
- Advance Software Engineering & Research Lab
- Multimedia and Visual Design Studio Lab
- Data Management and Internet Lab
- Software Development Lab

3.3 Department of Electrical Engineering

The Department of Electrical Engineering, at the Mehran University of Engineering and Technology Jamshoro, is one of the most prestigious schools of learning in the field of Electrical Engineering in Pakistan. The graduates of the Department are not only ably serving in Pakistan but also represent the country in various industries and academic institutions abroad. The Department aspires that its students at both graduate and postgraduate level be better prepared to handle modern-life challenges, therefore, it is continuously striving to improve quality of education and research.

The Electrical Engineering department at MUET currently offers postgraduate program leading to PhD in Electrical Engineering. The Electrical department offers a broad range of electrical courses, both elementary and advanced, spanning the whole gamut of Electrical disciplines including areas such as Power Electronics, Electrical Machines, Power Engineering, Control Systems, High Voltage Engineering and Energy Management.

We have highly developed faculty comprising of 07 PhDs, 10 MScs and other 08 competent teaching staff. Our postgraduate qualified faculty is successfully supervising, guiding and producing MScs and PhDs.

The research being carried out at the Department has direct bearing on the needs of national industry. A number of research papers are written every year by faculty members and postgraduate students which are normally published in major national and international journals or presented at international conferences.

The department is also equipped with state-of-the-art laboratories. Some of them are listed below:

- Power System Lab
- Power Electronics Lab
- Electrical Power Distribution & Utilization Lab

- Electrical Machines Lab
- High Voltage Engineering Lab
- Clean Energy Lab
- Control and Automation Lab
- Electrical Measurements & Circuit Lab
- Equipment and Training Lab
- Applied Electricity Lab
- Communication Lab
- Computer Lab
- Hi-Tech Lab
- Equipment Training Lab

3.4 Department of Electronic Engineering

Electronic Engineering artifacts play major roles in the evolution of mankind and culture. Today, the Electronic Engineering profession and the education of engineers are challenged by the rapidly changing nature of those engineering systems which determine what is meant by 'modern technology'. The advent of Microprocessor Technology has probably made Electronic Engineering the exemplary technology of this century, along with emergence of new species, with higher levels of integration. The existing and potential uses and applications of Electronics are multitudinous-Indeed it is difficult to point to any industrial or commercial area which may not eventually be affected by this technology.

It fulfills the more acute need of the development of the country by producing more qualified Engineers at postgraduate level. The programs offered provide technical manpower for the development and production of the Electronic & Biomedical Engineering in the country to provide qualified human resources as engineers and technology experts to develop indigenous capability of planning, designing and executing various projects in Electronic Engineering.

This department offers Master of Engineering in Electronic Systems Engineering and Automation & Control.

The department is also equipped with state-of-the-art laboratories. Some of them are listed below:

- Basic Electronics Laboratory
- Instrumentation & Control Laboratory
- Advanced Electronics Laboratory
- Digital Signal Processing Laboratory
- Digital Electronics & Microprocessor Laboratory
- Advanced Computer Applications Laboratory
- Communication System Laboratory
- Interactive Electronic Design Automation Laboratory
- Top Quality Centralized Instrumentation Laboratory-I
- Top Quality Centralized Instrumentation Laboratory-II
- Project Laboratory
- EDA Tools Laboratory
- PC Repair Shop

These laboratories are well equipped with latest equipment ranging from basic electronic devices, simulators and trainers to more advanced telecommunications trainers, such as Microwave & Antenna trainers. Excellent course work and due practical experience, provide ample job opportunities to our

graduates in both public and private sector organizations, national & multinational companies. There is huge job market of Electronic Engineers in Middle East, Europe, USA and Canada. Recently HEC has provided Electronic Design Tools (EDA) Software for ASIC & FPGA Design with 30 user licenses.

3.5 Department of Software Engineering

The Department offers Postgraduate programs leading to the Masters 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 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 software industry. In order to meet the latest trends in software and hardware technologies the department is equipped with following latest state-of-art laboratories, which maintain high standards through latest hardware and software support.

The department also aims to produce postgraduates who are equipped to both work in 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 such as, IBM Requisite pro, IBM functional & performance Testers, Lab View & latest version of Matlab @ Simulink software

Many renowned companies related to the I.T field offer many internship 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.

3.6 Department of Telecommunication Engineering

Mehran University of Engineering and Technology has got the privilege to establish the Telecommunication Department for the first time in the history of all Public and Private sector universities of Pakistan. Keeping in view the tremendous growth of Telecom Sector, there is great scope and consumption of Telecom Engineers, Experts and Solution Providers; therefore in year 2001 MUET started the program to produce graduates exclusively in Telecommunication Engineering by bifurcating the Electronic Department. The department would like to augment its existing programs to produce the high quality Telecom Personnel in various specialized areas such as Mobile and Wireless Communication, Terrestrial Satellite Communication, Multimedia & Networking under the establishment of Institute of Communication Technologies (ICT). HEC has already selected MUET as an ICT hub.

The department is also equipped with state-of-the-art laboratories. Some of them are listed below:

- PC-1 Laboratory
- Optical Communication Lab
- Network & Protocol Design Lab
- Transmission & Switching Laboratory
- Project Lab
- Analog & Digital Communication Laboratory
- Cellular Communication Laboratory

- Digital Signal Processing Laboratory
- Radio Communication Laboratory
- PC-2 Laboratory
- Advance Computing Laboratory

3.7 ACADEMIC STAFF

Meritorious Professor & Vice Chancellor
Dr. Mohammad Aslam Uqaili
B.E. (NED), M.Sc., Ph.D (UK)

Professor (Emeritus)
Dr. Abdul Qadeer Khan Rajput
B.E (Sindh), M.Sc. (UK), Ph.D (USA)

Meritorious Professor & Dean Faculty of EECE
Dr. Bhawani Shankar Choudhry
B.E. (MUET), Ph.D, Post Doc (UK)

Meritorious Professor & Director IICT
Dr. Mukhtiar Ali Unar
B.E. (MUET), M.Sc., Ph.D, Post Doc (UK)

Meritorious Professor (On Lien)
Dr. Aftab Ahmed Memon
B.E. (MUET), M.Sc. (USA), Ph.D (Japan)

Professor & Co-Director IICT
Dr. Zubair Ahmed Memon
B.E, M.E, Ph.D (MUET)

Head of the Departments

Chairman, Department of BM Engineering
Dr. Ahsan Ahmed Ursani
B.E, M.E (MUET), Ph.D (France)

Chairman, Department of EL Engineering
Dr. Abdul SattarLarik
B.E, M.E, Ph.D (MUET)

Chairperson, Department of ES Engineering
Dr. Wajiha Shah
B.E, M.E (MUET), Ph.D (Austria)

Chairman, Department of SW Engineering
Dr. Imran Ali Jokhio
B.E, M.E (MUET), Ph.D (UK)

Chairman, Department of TL Engineering

Dr. Faisal Karim Shaikh
B.E, M.E (MUET), Ph.D (Germany),
PostDoc (KSA)

Chairman, Department of CS Engineering
Dr. Sheeraz Memon
B.E, M.E (MUET), Ph.D (Australia)

Chairman, Department of Mechanical Engineering
Dr Dur Muhammad Pathan
B.E., M.E., Ph.D (MUET)

Professor

Dr. Ashfaque A. Hashmani
B.E (MUET), M.E (Singapore), Ph.D (Germany)
Dr. Asif Ali Shah
B.E, M.E (MUET), Ph.D (Astria)
Dr Ali Asghar Memon
B.E, M.E. (MUET), Ph.D (UK)
Engr. Abdul Rashid Shaikh (SZAB Campus)
B.E (Sindh), M.Phill (UK)
Engr. Abdul Qadir Chang (SZAB Campus)
B.E. (Sindh), M.E. (MUET)

Dr. Abdul Waheed Umrani
B.E (MUET), M.Sc, Ph.D (Singapore)
Dr. Mukhtiar Ahmed Mahar
B.E, M.E, Ph.D (MUET)
Dr. Javed Daudpoto
B.E (MUET), Ph.D (UK)
Engr. A Zafarullah Pathan (SZAB Campus)
B.E. (Sindh), M.Sc (Germany)

Associate Professor

Engr. Tahseen S. Hafiz
B.E, M.E (MUET)
Dr. Tariq Jamil Saifullah Khanzada
B.E, M.E (MUET), Ph.D (Germany)
Dr. Sania Bhatti
B.E, M.E (MUET), Ph.D (UK)
Dr. Faheem Aziz Umrani
B.E (MUET), Ph.D (UK)
Dr Zeeshan Ali Memon
B.E. (NWFPUET), Ph.D (UK)
Tayab Din Memon
B.E (MUET), Ph.D (Austrailia)

Engr. Muhammad Zahid Shaikh
B.E, M.E (MUET)
Dr. Sana Hoor Jokhio
B.E, M.E (MUET), Ph.D (UK)
Dr. Javed Ali Baloch
B.E (MUET), Ph.D (UK)
Dr Tanveer Hussain Phulpoto
B.E (MUET), Ph.D (UK)
Dr. Imtiaz Hussain Kalwar
B.E (MUET), Ph.D (UK)
Dr.
Dr. Wanod Kumar
B.E (MUET), M.Sc., Ph.D (UK)

Assistant Professor& IICT Coordinator

Engr. Liaqat Ali Thebo
B.E, M.E (MUET)

Assistant Professors

Engr. Anwar Ahmed Memon
B.E, M.E (MUET)
Engr. Tufail Ahmed Waseer
B.E, M.E (MUET)
Engr. Nafeesa Zaki
B.E, M.E (MUET)
Dr. Khalil-ur-Rehman Dayo
B.E, M.E, Ph.D (MUET)
Engr. Kehkeshan Asma (On Study Leave)
B.E, M.E (MUET)
Dr. Shahnawaz Talpur
B.E, M.E (MUET), Ph.D (China)
Engr. Anwar Ali Sahito
B.E (MUET), M.E (NED)
Dr. Adnan Arain
B.E, M.E, Ph.D (MUET)
Engr. Saba Baloch
B.E, M.E (MUET)
Engr. Farida Memon (On Study Leave)
B.E, M.E (MUET)
Engr. Mohsin Ali Shah
B.E, M.E (MUET)
Engr. Mahboob Khuwaja (On Study Leave)
B.E, M.E (MUET)
Dr. Shahzad Nizamani
B.E, M.E (MUET), P.hD (UK)
Engr. Amirta
B.E, M.E (MUET)
Dr. Noor-U-Zaman Laghari
B.E (MUET), Ph.D (UK)

Engr. Naveed Ahmed Jafri
B.E, M.E (MUET)
Engr. Farzana Rauf Abro
B.E, M.E (MUET)
Engr. Arbab Ali Samejo
B.E, M.E (MUET)
Engr. N.P. Chowdhry
B.E (MUET), M.Sc (UK)
Engr. Rizwan Badar Baloch
B.E, M.E (MUET)
Engr. Zulfiqar Ali Arain
B.E, M.E (MUET)
Engr. Salahuddin Saddar
B.E, M.E (MUET)
Engr. Kamran Kazi
B.E, M.E (MUET)
Engr. Shakeela Memon
B.E, M.E (MUET)
Dr. Mohamamd Arif
B.E (SSUET), M.E (MUET), Ph.D (UK)
Dr. Arbab Nighat
B.E, M.E (MUET), Ph.D (China)
Engr. Shanzah Mohsin
B.E, M.E (MUET)
Engr. Yasmeen Naz Panhwar
B.E, M.E (MUET)
Engr. Hamna Rajput
B.E (MUET),M.S (Canada)
Dr. Naeem Mahoto
B.E, M.E (MUET), Ph.D (Italy)

Engr. Faheemullah Shaikh (On Study Leave)

Engr. Mrs. Mokhi Maan Siddiqui

B.E, M.E (MUET)
Engr. Muhammad Rashid Memon
B.E, M.E (MUET)
Dr. Aamir Mahmood Soomro
B.E, M.E (MUET), Ph.D (China)
Engr. Abdul Jabbar Memon
B.E, M.E (MUET)
Dr. Pervez Hamid Sheikh
B.E, M.E (MUET), Ph.D (Malaysia)
Engr. Irfan Ahmed Halepoto
B.E, M.E (MUET)
Dr. Amjad Ali
B.E (SSUET), M.E (MUET), Ph.D (China)
Engr. M. Zaigham Abbas Shah
B.E (MUET), M.Sc (UK)
Dr. Mohsin Ali Memon
B.E, M.E (MUET), Ph.D (Japan)
Dr. Abdul Latif Memon
B.E, M.E (MUET), Ph.D (China)
Dr. Badar Muneer
B.E, M.E (NED), Ph.D (China)
Engr. Naeem Aijaz Yousfani
B.E, M.E (MUET)
Engr. Zafi Sherhan Shah (On Leave)
B.E (MUET), M.E (UK)
Engr. Shakir Ali Soomro (SZAB Campus)
B.E (MUET), M.E. (NED)
Engr. Nadeem Ahmed Tunio (SZAB Campus)
B.E (MUET), M.E (Taxila)

B.E, M.E (MUET)
Engr. Atif Qaimkhani
B.E, M.E (N.E.D)
Engr. Mansoor Ahmed Soomro
B.E, M.E (MUET)
Engr. Nayyer Hussain Mirjat
B.E (MUET), M.E (NED)
Engr. Attiya Baqai(On Study Leave)
B.E, M.E (MUET)
Engr. Areej Fatma
B.E, M.E (MUET)
Engr. Khuhed Memon
B.E (NUST), M.E (Singapore)
Dr. Abdul Qadir Ansari
B.E, M.E, Ph.D (MUET)
Engr. Din Muhammad Sangrasi
B.E, M.E (MUET)
Dr. Faheem Yar Khan
B.E, M.E (MUET), Ph.D (Italy)
Engr. Imran Ali Qureshi
B.E, M.E (MUET)
Engr. Riaz Soomro
B.E, M.E (MUET)
Dr. Saifullah Samo
B.E, M.E (MUET), Ph.D (China)
Dr. Mohsin Ali (SZAB Campus)
Ph.D. (Malaysia)

Lecturer

Engr. Qurban Ali Memon
B.E, ME (MUET)
Engr. Abdul Latif Samoon (On Study Leave)
B.E, M.E (MUET)
Engr. Abdul Hakeem Memon (On Study Leave)
B.E, M.E (MUET)
Engr. Mahesh Kumar (On Study Leave)
B.E, M.E (MUET)
Engr. Rabia Chandio
B.E, M.E (MUET)
Engr. Aamir Ali Patoli
B.E, M.E (MUET)
Engr. Ali Asghar Manjotho
B.E, M.E (MUET)
Engr. Hira Nouman
B.E, M.E (MUET)
Engr. Umair Ahmed Korai
B.E, M.E (MUET)
Engr. Mehran Memon
B.E, M.S (Malaysia)
Engr. Kalsoom Bhagat (SZAB Campus)
B.E (QUEST), M.E (MUET)

Engr. Anoud Abdullah
B.E, M.E (MUET)
Engr. Zahid Hussain Khaskheli
B.E, M.E (MUET)
Engr. Syed Shehram Shah
B.E (MUET), M.E (UK)
Engr. Salman Afridi
B.E, M.E (MUET)
Engr. Fawad Ali Mangi
B.E, M.E (MUET)
Engr. Sara Qader Rajput
B.E, M.E (MUET)
Engr. Shakeel Ahmed Laghari
B.E, M.E (MUET
Engr. Saima Hafeez
B.E, M.E (MUET)
Engr. Saad Kalwar
B.E, M.E (MUET)
Engr. Irfan Ahmed (SZAB Campus)
B.E, M.E (MUET)

3.8 Master Degree Programs Offered

The Institute of Information and Communication Technologies currently offers following Master of Engineering Programs:

1. Communication Systems and Networks
2. Computer and Information Engineering
3. Electrical Power Engineering
4. Electronic Systems Engineering
5. Automation & Control
6. Information Technology
7. Mechatronics
8. Biomedical Engineering
9. Software Engineering
10. Telecommunication Engineering and Management

3.8.1 M.E in Communication Systems & Networks (CSN)

OBJECTIVES

The Program aims at producing graduates, who have knowledge in computers, networks and communication engineering and are able to apply knowledge in the hardware and software administration of computer systems, database management, and networking. The objective is to provide manpower for developing countries capable of designing, controlling, and developing computer-network systems. A highly motivated team of professors in this Masters Program is focused to produce engineers who will be capable of conducting research in both theoretical and practical aspects with moral and professional ethics.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS
	FIRST SEMESTER	
1	Advanced Computer Networks	2 – 1
2	Signal & Systems	2 - 0
3	Advanced Simulation Tools	0 - 1
4	Information Theory & Coding Techniques	3 – 0
	SECOND SEMESTER	
1	Advanced Digital Signal Processing	2 – 1
2	Emerging Wireless Networks	2 – 0
3	Network Security	2 – 0
4	Internet & Mobile Commerce	2 – 0
5	Optical Communication Systems & Networks	2 – 0
	THIRD SEMESTER	
1	Emerging Wireless Networks	2 – 0
2	Internet of Things	2 – 0
3	Thesis	6

3.8.2 M.E. in Computer and Information Engineering (CIE)

OBJECIVES

The main objective of this program is to produce high caliber computer engineers, professionals and consultants who have sound knowledge of both computer hardware and software.

COURSES OFFERED

S.No.	SUBJECTS	Credit Hours
	FIRST SEMESTER	
1	Advanced Digital Communication	2 – 0
2	Digital Signal Processing	2 – 1
3	Object Oriented Analysis and Design	2 – 1
4	Database Design	2 – 0
	SECOND SEMESTER	
1	Computer Architecture and Assembly Language	2 – 1
2	Cloud Computing	2 – 1
3	Computer Networks and Information Security	2 – 0
4	Data Mining	2 – 0
5	Wireless Sensor Networks	2 – 0
	THIRD SEMESTER	
1	Computer Vision	2 – 1
2	Applied Artificial Intelligence	3 – 0
3	Thesis	6

3.8.3 ME in Electrical Power Engineering (ELP)

OBJECTIVES

Around the world, throughout every country, electricity is the most widespread and desirable form of energy. Its many advantages include flexibility, ease of control and distribution, high efficiency, and cleanliness availability all the times, no need to store it like Coal etc. As population grows and economic growth continues, electric energy is in short supply. 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 Postgraduate Studies has developed a Program of postgraduate studies and research leading to M.E & PhD. The courses have been designed to solve every day problems and every effort is being made to arrive at the solutions of these problems through the teaching and research.

The M.E 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. The program will allow motivate researchers to expand their knowledge and acquire new skills in analysis and problem solving, creating challenging opportunities for a full, rewarding career. The program will also cater the demands and needs of local industry and strategic R & D organizations of the country. The program has been devised keeping in view the latest market demand and encompasses a broad area covering Power Electronics, Electrical Power Transmission and Distribution, Power Engineering, Control Systems, High Voltage Engineering and Energy Management.

The courses also serve the aim of developing knowledge and expertise in the field of Power Engineering, which is mainly required, by WAPDA, KESC, private Power Sectors and manufacturing industries etc. This M.E program will also be offered at Shaheed Zulfiqar Ali Bhutto Campus Khairpur Mirs.

COURSES OFFERED

S.No.	SUBJECTS	Credit Hours	Marks
	FIRST SEMESTER		
1	Power Quality	2 – 0	50
2	Electrical Power Transmission and Distribution	2 – 0	50
3	Power System Operation and Control	3 – 0	100
4	Clean Energy Technologies	2 – 0	50
5	Advanced High Voltage Engineering	2 – 0	50
	SECOND SEMESTER		
1	Power Electronics and Motor Drives	3 – 0	100
2	Power System Stability	2 – 0	50
3	Power System Analysis	2 – 0	50
4	Energy Management	2 – 0	50
5	Power System Protection	2 – 0	50
	THIRD SEMESTER		
1	FACTS and HVDC	2 – 0	50
2	Power Engineering Laboratory	0 – 1	50
3	Power System Planning and Management	2 – 0	50
4	Thesis	6	

3.8.4 M.E in Electronic Systems Engineering (ESE)

OBJECTIVES

Embedded applications are calling for an increasing number of specialized electronic systems. Standard, off-the-shelf solutions are rarely able to meet the expectations and demands for functionality, performance and energy dissipation that customers make on such systems. Electronic system design demands a tight integration on a very large profile of knowledge and skills ranging from hardware and software system architecture to semiconductor physics. Functionality of complex embedded or stand-alone systems, to be applied in areas such as general-purpose computing, telecommunications, automotive, entertainment, and multimedia, may be realized by various combinations of analog and digital hardware and software parts. Systems can be implemented by single or multiple integrated circuits and software modules that can be either of special purpose, programmable or reconfigurable. In the current and coming decades VLSI design, which currently enables us to build million-transistor chips, will become Gigascale (GSI) design and Terascale Scale Integration (TSI) design, respectively. In this context VLSI design can signifies more than one billion and one trillion devices per chip, respectively. From a system design perspective, this increase in integration levels is qualitatively different from past integration improvements of similar magnitudes. In particular, manufacturing defects will increase, devices will get less reliable, interconnect will be orders of magnitude slower than transistors, new nanotechnologies will emerge, and signal and power management issues will be aggravated.

The complexity of electronic designs and the number of technologies that must be mastered to bring to market winning products have forced electronic companies to focus on their core competence. Product specification, IP creation, design assembly and manufacturing are, for the most part, no longer taking place in the same organization. Indeed, the electronic industry has been disaggregating from a vertically oriented model into a horizontally oriented one for a few years. Integration of the supply chain is today a serious problem. Time-to-market pressure, design complexity and cost of ownership for masks are driving towards more disciplined design styles that favor design re-use and correct-the-first-time

implementations. The quest for flexibility in embedded system design coupled with the previous considerations is pushing the electronic industry towards programmable solutions for a larger class of designs than ever before.

Embedded systems are gaining increasing importance in all aspects of engineering. It is expected that in the near future roughly no technical artifact will exist without embedded information technology. There is a tendency to software oriented embedded and/or dependable systems, based on standardized micro-controller cores. This implies that the design of embedded real-time software and real-time operating systems will play a dominant role in this field. As more and more networks of micro-controllers are applied, real-time communication systems and in general the design of distributed embedded systems will gain importance. As high-performance embedded computing components have become available the challenges of designing embedded systems have become more acute.
The Electronic System Engineering program caters all the above mentioned needs.

COURSES OFFERED

S.No.	SUBJECTS	Credit Hours
	FIRST SEMESTER	
1	Electronic Instrumentation	2 – 1
2	Modeling and Simulation of Dynamic Systems	3 – 0
3	Advanced Integrated Circuit design	3 – 0
4	Advanced Embedded System Design	2 – 1
	SECOND SEMESTER	
1	Power Electronics and Drives	2 – 1
2	Microelectronics	3 – 0
3	Communication Systems	3 – 0
4	Advanced Digital Design	2 – 1
	THIRD SEMESTER	
1	Modern Trends in Electronic Systems Design	3 – 0
2	IC Design and Manufacturing	3 – 0
3	Thesis	6

3.8.5 M.E in Automation & Control

OBJECTIVES

Automation, control and robotics are pervasive enabling technologies found in almost every modern technical system, particularly in manufacturing and production. They combine the diverse and rapidly expanding disciplines of automation, control, mechanics, software and signal processing. This course is ideal if you wish to develop comprehensive knowledge and understanding of • classical and modern control theory • industrial automation • systems analysis • design and simulation • robotics. You gain the ability to apply principles of modeling, classical and modern control concepts and controller design packages in various areas of industry. You also learn how to design and exploit automation and robotic systems in a range of manufacturing and industrial applications.

Comprising a mixture of lectures delivered by researchers and practical laboratory classes, this course is designed to provide students from an Electrical/Electronic or numerate sciences background with an intense well-rounded education in modern methods of automation and control. Individual Projects undertaken by our students are supported by a dedicated team of Project Supervisors and offer students

an excellent opportunity to personally explore the practical application of skills learnt in the classroom and laboratory.

The courses the tools and knowledge necessary to create autonomous systems which are smart enough to control and regulate themselves. This means that you will learn how a machine can use its sensors to properly sense the environment around it, how to choose and place these sensors for the best results, and how your creation will use this data to do whatever it is supposed to do.

COURSES OFFERED

S.No.	SUBJECT	Credit Hours
	FIRST SEMESTER	
1	Linear Control Theory	3+0
2	Modern Power Electronics and Drives	3+0
3	Sensors and Actuators for Automatic Systems	2+1
4	Embedded Systems for Automation	2+1
	SECOND SEMESTER	
1	Advanced Digital Signal Processing	2+1
2	Industrial Automation and Robotics	2+1
3	Advanced Control Theory	3+0
4	Applicable Artificial Intelligence	3+0
	THIRD SEMESTER	
1	Nonlinear Control Theory	3+0
2	Distributed Control Systems	2+1
3	Thesis	6

3.8.6 M.E in Information Technology (IT)

OBJECTIVES

The challenging field of IT needs creative and knowledgeable professionals committed to quality. The aim of ME in IT program is to provide an opportunity to the students to acquire up-to-date technical knowledge; marketable skills, professional competencies and valuable expertise in the rapidly advancing field of Information Technology to ensure a prosperous future. The program will produce graduates who will be flexible, adaptable to change, and able to face the challenges of 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 the information technology as well as for managing complete entities in many other areas of technology.

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.

COURSES OFFERED

S.No.	SUBJECTS	Credit Hours	Marks
	FIRST SEMESTER		
1	Object Oriented Programming	2 – 1	50 – 50
2	Data Communication and Networking	2 – 1	50 – 50
3	Advanced Microprocessor Systems	2 – 0	50
4	Information Security	2 – 0	50
	SECOND SEMESTER		
1	Knowledge Discovery and Data Mining	2 – 1	50 – 50
2	IT Project Management	2 – 0	50
3	Wireless Networks	2 – 0	50
4	Human Computer Interaction	2 – 0	50
5	Research Methodology and Techniques	2 – 0	50
	THIRD SEMESTER		
01	Machine Learning	2 – 0	50
02	Mobile Application Development	2 – 0	50
03	M.E. Project	6	

3.8.7 M.E in Mechatronics

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 61omputerized 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 programme has been carefully designed by keeping interdisciplinary nature of this programme in mind. The M.E. Mechatronics programme comprises of a mix of theoretical and experimental work coupled with research. Experimental facilities will be available to students through following laboratories:

1. Mechatronics Lab.
2. Computer Lab.
3. Instrumentation and Control Lab.
4. Top Quality Centralized Instrumentation Centre
5. Computer Image Processing lab.
6. Engineering Mechanics Lab.

The University has established Mechatronics laboratory which is equipped with core i5 desktop PCs and state-of-the-art hardware and software to carry out practical work and research. The lab. Has been designated as National Instruments LabVIEW Academy as well. Students will have a choice to take Certified LabVIEW Associate Developer (CLAD) examination during their study. The international certification will raise job prospects of the graduates.

AIMS AND OBJECTIVES

The aim of the programme 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.

The objectives of this programme are laid down as under:

1. To equip students with the knowledge spanned over multiple disciplines for the design and development of mechatronic systems
2. To impart knowledge of various control systems
3. To implement concept based teaching
4. To reinforce theoretical concepts with the laboratory based hands on experiments
5. To prepare students to innovate and develop intelligent mechatronic applications
6. To prepare students for the research and development in the area of mechatronics
7. To develop critical thinking skills through project based learning

EXPECTED OUTCOMES

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

1. Design a mechanical system and carry out computer aided design and analysis
2. Characterize and implement sensors and actuators for a particular systems
3. Analyze a dynamical system and device suitable control structure
4. Program Microcontrollers, Field Programmable Gate Arrays, and Programmable Logic Controllers
5. Understand robot manipulation and control
6. Design and develop a robotic system

COURSES OFFERED

S.No.	SUBJECTS	Credit Hours
	FIRST SEMESTER	
1	Sensors and Actuators	2 – 0
2	Mechanics and Machine Elements	2 – 0
3	Classical Control Systems	2 – 0
4	Modelling and Simulation of Dynamical Systems	2 – 1
5	Measurement Systems	2 – 1
	SECOND SEMESTER	
1	Embedded Systems and Applications	2 – 1
2	Computational Intelligence	3 – 0
3	Modern Control Systems	3 – 1
4	Mechanics of Robot Manipulators	2 – 0
	THIRD SEMESTER	
1	Computer Aided Mechanical Design	2 – 1
2	Machine Vision	2 - 0
3	Thesis	6

3.8.8 M.E in Biomedical Engineering

OBJECTIVE

The Master of Engineering program in Biomedical Engineering is aimed at educating graduates to bequeath them the knowledge and skills required to work for and plan establishment and development of healthcare projects, can design, procure, install and commission diagnostic, therapeutic, rehabilitation, and prosthetic biomedical equipment.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS
	FIRST SEMESTER	
1	Advanced Telemedicine Systems	2 – 0
2	Medical Instrumentation	2 – 0
3	Statistics in Medicine	2 – 0
4	Digital Signal Processing for Measurement Systems	3 – 0
5	Ultrasonic Instrumentation and Imaging	2 – 0
	SECOND SEMESTER	
1	Medical Image Processing	2 – 0
2	Mechatronics in Medicine	2 – 0
3	Operations Management	2 – 0
4	Radiography and Computed Tomography	3 – 0
5	Laser and Spectroscopy	2 – 0
	THIRD SEMESTER	
1	Modelling and Simulation	0 – 1
2	Advanced Imaging Techniques	2 – 0
3	Research Methodology	3 – 0
4	Thesis	6

3.8.9 M.E in Software Engineering

OBJECTIVE

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. This objective also includes the need for in-depth knowledge of computer programming, implementing and planning computer systems and all the phases in the lifecycle of software, working from a practical point of view in accordance with the job market.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS
	FIRST SEMESTER	
1	Software Engineering Management	3 – 0
2	Distributed Database Systems	2 – 0
3	Modern Computing Paradigm	3 – 0
4	Mobile Computing	2 – 0
5	Software Engineering Lab 1	0 – 1
	SECOND SEMESTER	
1	Data Mining Concepts & Techniques	3 – 0
2	Formal Methods vin SE	2 – 0
3	Software Quality and Testing	3 – 0
4	Natural Language Programming	2 – 0
5	Software Engineering Lab 2	0 – 1

THIRD SEMESTER		
1	Software Dependability and Reliability	2 – 1
2	Semantic based Software Engineering	2 – 1
3	Thesis / Project	6

3.8.10 M.E. Telecommunication Engineering & Management (TLEM)

INTRODUCTION

This program has especially been designed to enhance the technical knowledge as well as management skills of the graduates of Telecommunication Engineers.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS
FIRST SEMESTER		
1	Advanced Data Communication & Networks	2 – 0
2	Management	2 – 0
3	Transmission & switching Techniques	2 – 0
4	Financial Accounting	2 – 0
5	Wireless Communication Systems	2 – 0
6	Optical Communication	2 – 0
SECOND SEMESTER		
1	Mobile Network Planning & Optimization	2 – 0
2	Marketing	2 – 0
3	Organizational Behavior	2 – 0
4	Cost Accounting	2 – 0
5	Telecom Management	2 – 0
6	Telecom Laws, Policies and Regulations	2 – 0
THIRD SEMESTER		
1	Human Resource Management	2 – 0
2	Telecom Management Networks	2 – 0
3	Emerging Networks	2 – 0
4	Thesis	6

MEHRAN UNIVERSITY INSTITUTE OF SCIENCE, TECHNOLOGY AND DEVELOPMENT

4. MEHRAN UNIVERSITY INSTITUTE OF SCIENCE, TECHNOLOGY AND DEVELOPMENT

4.1 INTRODUCTION

Mehran University Institute of Science, Technology and Development (MUISTD) is established to produce highly qualified manpower at MS, MPhil and PhD degree levels, as well as, to formally train the existing personnel already in charge in this field. It also conducts research on different aspects of effective and viable S&T policy framework and their strategies to achieve these objectives.

It is established to be a centre of excellence for teaching, training and research required to respond to the modern day challenges. Its R&D activities are aimed at focusing on all important issues relating to development, management, and exploitation of human and natural resources and other means and methods for rapid socio-economic development of the country. The clients of research results and training of this institute are universities, R&D organizations, government, industry, business, individuals in public and private sectors. It is intended to serve as a nerve centre and render suitable advice for the required scientific and technological development to academics, research, industry, business, government, etc.

In addition to policy and strategy MUISTD is training the human resource to respond to the need of rapidly changing business environment. In the era of national and international competition the professional managers and decision makers require capabilities to perform exceptionally well and make informed, knowledgeable and visionary decisions in lines with effective policies. Therefore, in addition to MS programs in policy and strategy, MUISTD is offering MBA degree programs in different fields of specializations. The following programs are offered by MUISTD.

1. MS in Science, Technology and Innovation Policy
2. MS in Technology and innovation Management
3. MS in Public Policy
4. MS in Human Resource Management
5. MS in Project Management
6. MBA in Finance
7. MBA in Marketing
8. MBA in Human Resource Management
9. MBA in Operations Management
10. MBA in Innovation and Entrepreneurship

Through these programs MUISTD is developing and disseminating knowledge and aims to devise S&T policies in consonance with the national priorities and goals taking different perspectives of socio-economic development into account.

4.2 AIMS AND OBJECTIVES

Aims of the Institute are:

(a) To produce trained and qualified manpower:
   (i) with experience of review national policies with an insight and ability to look into and analyse in depth any current and futuristic issue under question and determine proper approach and route of its implementation to achieve the original and amended objects;

(ii) 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;
(iii) with an experience of design and development of practical innovative projects and their management;
(iv) with an expertise to work with establishments of policy and review, research and development, innovation and management in public and private sectors.
(v) with an expertise to manage financial and non-financial issues associated with businesses.

(b) To conduct research on issues of policy and strategies and developing, disseminating and managing its results for the benefit of academia, industry, business, government and its use in the decision making process.

The objectives of the Institute are:

(a) To conduct multidisciplinary teaching and research leading to MS, MBA, MPhil and PhD degrees and to conduct short term training programmes and refresher courses in the field of science and technology policy and management to produce the required qualified manpower. The postgraduate studies deal with:
(i) inquiring into nature and determinants and direction for scientific including social sciences, engineering and technological education and research and development in the universities, institutes and other organizations, in utilization of research, innovation and industrial development, socio-economic change, etc;
(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.
(b) To diffuse the findings and disseminate research results among academics and researchers, business and industry, and decision and policy makers.
(c) To strengthen interaction among the users of research of the Institute.
(d) To promote knowledge and understanding of main developments taking place in the world for improving upon the national policies, plans, programmes and projects.
(e) To provide this facility for outside world in general and the developing countries in particular.
(f) To organize meetings, conferences, seminars, symposia and workshops, etc. and publish literature.
(g) To develop international liaison and network with the similar institutions of the world.
(h) Any other action necessary to promote the above objectives.

4.3 ACADEMIC STAFF

1.	Prof. Dr S.M Qureshi B.E (NED), M.E (Thailand), Ph.D (UK)	Professor Emeritus and Director (Honorary)
2.	Dr Arabella Bhutto B.E, M.E (MUET), MSc., Ph.D (UK)	Associate Professor and Co-Director
3.	Prof. Dr Pir Roshan Shah Rashdi B.E (MUET), Ph.D (UK)	Professor
4.	Zahid Ali Memon B.E (MUET), M.Sc (U.K), PhD (China)	Secretary and Associate Professor
5.	Dr Qazi Moinuddin Abro B.E (QUEST), M.Sc, Ph.D (UK)	Associate Professor (on lien)

6.	Mrs. Iffat Batool Naqvi M.Sc (IUB), M.Sc (UK)	Assistant Professor (on study leave)
7.	Mr. Pir Irfan S. Rashdi B.E (MUET), M.Sc, MPhil (UK)	Assistant Professor
8.	Mr. Wahid Bux Mangrio BCS (Sindh University), MS (MUET)	Lecturer
9.	Mr. Javaid Ali Dars BBA (PIMSAT), MBA (ALOU), MPhil (Sindh University)	Lecturer

4.4 MASTER DEGREE PROGRAMS (MS)

The Institute offers following Master of Science (MS) Programs:

1. Science, Technology and Innovation Policy (STIP)
2. Technology and Innovation Management (TIM)
3. Public Policy (PP)
4. Human Resource Management (HRM)
5. Project Management (PM)

4.4.1 MS in Science, Technology and Innovation Policy (STIP)

This programme 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 programme 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 programme 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 organisations 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 programme shall help students learn how to study, analyze and participate in these policy activities in a systematic fashion.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Principles of Public Policy (PPP)	3 – 0	100
2	Social Perspectives of Science and Technology (SPST)	3 – 0	100
3	Economics (EC)	3 – 0	100
4	Statistical Methods (SM)	3 – 0	100
	SECOND SEMESTER		
5	Technology and Innovation Systems (TIS)	3 – 0	100
6	Environmental Policy and Industrial Technology (EPIT)	3 – 0	100
7	Advanced Research Methods (ARM)	3 – 0	100
8	ICT Concepts and Tools (ICT)	3 – 0	100
	THIRD SEMESTER		
9	Science, Technology and Innovation Policy (STIP)	3 – 0	100
10	THESIS	6	

4.4.2 MS in Technology and Innovation Management (TIM)

This programme is primarily aimed at students who wish to pursue careers in areas related to technology and innovation management in public sector in general and private sector in particular. The programme shall aim to provide students with the analytical tools with which to understand, analyze and manage innovations in processes, products and services. This programme focuses on the innovating organizations and practical problem-solving skills required for creative management practice and research.

Technological innovations are the key challenges in today's organizations. Whether large or small, manufacturing or service, public or private sector, organizations have increasingly come to rely on technology to give them a competitive edge in the products or services which they offer, and the processes they use to create and deliver them.

The course is designed to acquaint students with recent theoretical and empirical developments in technology dynamics, management and strategy and to provide them with quantitative management techniques of selection, evaluation and implementation.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
FIRST SEMESTER			
1	Knowledge Management (KM)	3 – 0	100
2	Tools for Innovation Management (TIM)	3 – 0	100
3	Economics (EC)	3 – 0	100
4	Statistical Methods (SM)	3 – 0	100
SECOND SEMESTER			
5	Entrepreneurship (ENTR)	3 – 0	100
6	Global Competitive Strategy (GCS)	3 – 0	100
7	Advanced Research Methods (ARM)	3 – 0	100
8	ICT Concepts and Tools (ICT)	3 – 0	100
THIRD SEMESTER			
9	Managing Innovation (MI)	3 – 0	100
10	THESIS	6	

4.4.3 MS in Public Policy (PP)

This programme is primarily aimed at students who wish to pursue careers in areas related to public policies. The programme shall aim to provide students with knowledge of analytical tools to understand,

analyse and criticize the large number of public policies in the education, health, water and to contribute to policy formulation.
The programme focuses on the interactions between government and society, enabling an understanding of the problem identification from society, and proposing solutions through devising the public policy.
The programme will help in learning from public policies of developed and under developing countries. Although policies vary from country to country and from government to governments in all parts of the world, however, learning of their development and implementation for social welfare will enable students to participate in the policy activities in a systematic fashion.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Principles of Public Policy (PPP)	3 – 0	100
2	Management and Governance (MG)	3 – 0	100
3	Economics (EC)	3 – 0	100
4	Statistical Methods (SM)	3 – 0	100
	SECOND SEMESTER		
5	Political Institutions and Public Policy (PIPP)	3 – 0	100
6	Public Policy Analysis (PPA)	3 – 0	100
7	Advanced Research Methods (ARM)	3 – 0	100
8	ICT Concepts and Tools (ICT)	3 – 0	100
	THIRD SEMESTER		
9	Writing and Communicating in Public Policy (WCPP)	3 – 0	100
10	THESIS	6	

4.4.4 MS in Human Resource Management (HRM)

This programme 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 programme 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 concept and to provide analytical tools that enable HR specialists to diagnose organizational behavior and to take appropriate actions.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Human Resource Management (HRM)	3 – 0	100
2	Performance Management (PM)	3 – 0	100
3	Organizational Behavior and Leadership (OBL)	3 – 0	100
4	Statistical Methods (SM)	3 – 0	100
	SECOND SEMESTER		
5	Employee Training and Development (ETD)	3 – 0	100
6	Compensation and Reward Management (C&RM)	3 – 0	100
7	Employee Relations and Labor Laws (ERL)	3 – 0	100
8	Advanced Research Methods (ARM)	3 – 0	100
	THIRD SEMESTER		
9	Strategic Human Resource Management (SHRM)	3 – 0	100
10	Financial Management (FM)	3 – 0	100
11	THESIS	6	

4.4.5 MS in Project Management (PM)

In today's competitive global economy, focus of businesses is more towards project management for delivering competitive results. This programme is aimed at students who wish to pursue careers in corporate sector and SMEs from diversified sectors. The programme shall aim to provide students with knowledge and expertise of initialing, planning, executing, monitoring/controlling and closing out projects. The programs offers 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 programme shall help students learn about all these project management practices.

COURSES OFFERED

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Fundamentals of Project Management (FPM)	3 – 0	100
2	Managing Innovation (MI)	3 – 0	100
3	Advanced Research Methods (ARM)	3 – 0	100
4	Program and Portfolio Management (PPM)	3 – 0	100
	SECOND SEMESTER		
5	Project Management Software (PMS)	3 – 0	100
6	Project Risk Management (PRM)	3 – 0	100
7	Project Cost and Finance Management (PCFM)	3 – 0	100
8	Project Planning, and Implementation (PPI)	3 – 0	100
	THIRD SEMESTER		
9	Procurement and Contract Management (PCM)	3 – 0	100
10	Project Monitoring and Evaluation (PME)	3 – 0	100
11	THESIS	6	

4.5 MASTER DEGREE PROGRAMS (MBA)

This programme 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 programme shall aim to provide students with knowledge of theoretical concepts, analytical tools and decision making strategies from successful case studies around the world.
The programme focuses on the interactions of scientific developments and their utilities in the form of products, processes and services.
The programme will help in learning from case studies of successful businesses including SMEs and in designing tools, techniques and solutions fit for the local contexts. The following MBA Programs shall be offered to students with the business oriented and non-business oriented background:

1. MBA in Finance
2. MBA in Marketing
3. MBA in Human Resource Management
4. MBA in Operations Management
5. MBA in Innovation and Entrepreneurship

4.5.1 COURSES OFFERED

The students with non-business background will first learn basic courses required to understand MBA. These courses are given in the table for non-business background. The students with business background will directly start courses given in table titled: MBA for students with business background. Details of elective courses are then discussed in their respective tables.

COURSES TO BE TAUGHT IN MBA FOR STUDNETS WITH NON-BUSINESS BACKGROUND

S.No.	SUBJECTS	CREDIT HOURS	MARKS
	FIRST SEMESTER		
1	Business Communication	3 – 0	100
2	Business Mathematics and Statistics	3 – 0	100
3	Financial Accounting	3 – 0	100
4	Economics	3 – 0	100
5	Theory and Practice of Management	3 – 0	100
	SECOND SEMESTER		
6	Organizational Behavior & Leadership	3 – 0	100
7	Business Policy and Law	3 – 0	100
8	Principles of Marketing Management	3 – 0	100
9	Financial Management	3 – 0	100
10	Human Resource Management	3 – 0	100
	THIRD SEMESTER		
11	Strategic Marketing Management	3 - 0	100
12	Managerial Economics	3 - 0	100
13	Production and Operation Management	3 - 0	100
14	Tools for Innovation Management	3 - 0	100
	FOURTH SEMESTER		
15	Advance Business Research Methods	3 - 0	100
14	Strategic Financial Management	3 - 0	100
15	Elective – I (Selected Specialization)	3 - 0	100
16	Elective – II (Selected Specialization)	3 - 0	100
	FIFTH SEMESTER		
17	Elective – III (Selected Specialization)	3 - 0	100
18	Elective – IV (Selected Specialization)	3 - 0	100

19	THESIS	6

COURSES TO BE TAUGHT IN MBA FOR STUDNETS WITH BUSINESS BACKGROUND

S.No.	SUBJECTS	CREDIT HOURS	MARKS
FIRST SEMESTER			
1	Strategic Marketing Management	3 - 0	100
2	Managerial Economics	3 - 0	100
3	Production and Operation Management	3 - 0	100
4	Tools for Innovation Management	3 - 0	100
SECOND SEMESTER			
5	Advance Business Research Management	3 - 0	100
6	Strategic Financial Management	3 - 0	100
7	Elective – I (Selected Specialization)	3 - 0	100
8	Elective – II (Selected Specialization)	3 - 0	100
THIRD SEMESTER			
9	Elective – III (Selected Specialization)	3 - 0	100
10	Elective – IV (Selected Specialization)	3 - 0	100
11	THESIS	6	

ELECTIVE COURSES FOR MBA PROGRAMS

Elective Courses for MBA in Finance

S. No.	Title of the Course	Credit Hours	Marks
1.	International Financial Management	3 – 0	100
2.	Islamic Banking and Finance	3 – 0	100
3.	Portfolio and Risk Management	3 – 0	100
4.	Banking Regulations and Policies	3 – 0	100
5.	Micro Finance and Credit	3 – 0	100
6.	Corporate Governance and Finance	3 – 0	100
7.	Analysis of Financial Statement	3 – 0	100

Elective Courses for MBA in Marketing

S.#	Title of the Course	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 Behaviour	3 – 0	100

Elective Courses for MBA in Human Resource Management

S.No	Title of the Course	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 for MBA in Operations Management

S.No	Title of the Course	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 for MBA in Innovation and Entrepreneurship

S.No	Title of the Course	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

4.6 SOME 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 Labour 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 economical and social impacts
- Energy demand and supply patterns for next 25 years

4.7 COMPUTER LABORATORY

The Institute owns two computer labs, which extend the high speed Internet and e-mail facilities to the research students.

4.8 SEMINAR LIBRARY

The Institute also has a seminar library available, which provides the latest Publications of books, Journals, Research reports in the relevant field. In addition students will also be able to utilize the central library of the University.

Joint Degree in Masters' in

Energy & Environmental Engineering

Offered by

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO PAKISTAN

&

SHENYANG AEROSPACE UNIVERSITY, CHINA

Introduction

The components of Environment (Atmosphere, Land, water and Ocean) are being threatened by Anthropogenic (Mankind) and Industrial activities, which required to be cared for living Organisms. Greenhouse gases, unattended solid waste, over exploitation of water resources and disposing of waste water in to ocean generates Air pollution, water pollution, land degradation and marine pollution problems respectively. The course syllabus of Energy and Environmental Engineering makes students expertise to reduce the pollutant controlling equipments, solid waste management, water treatment techniques and wastewater treatment techniques specially focusing the pollution due the conversion of primary sources of energy into the secondary and tertiary. The course also highlights Environmental Impact Assessment of energy projects, Environmental Health and Safety and monitoring/auditing tools of ISO 14000 and ISO 18000. The course work of Postgraduate Diploma is comprised of 33 credit hours with 11 subjects to be completed in three semesters in full time evening program. After qualifying 60% overall marks in all subject and 50% marks in each subject, candidate will be eligible to take Masters Thesis with minimum possible time of 6 month.

Institute of Environmental Engineering & Management is offering academic excellence to the graduate students through will- experienced and highly qualified visiting faculty available in University and outside as well as internship with Industries.

5.1 Vision

To produce Energy and Environmental Engineering Expert who share their skill in the establishment of Environmental Management system in all Industry, Agricultural land, Irrigation and Drainage infrastructures, communication network systems and Rural-Urban Utilities to enter in the development of 21st Century goal of making national Economy as per World Trade Organization (WTO) requirements.

5.2 Objectives

1. To make Post Graduate/Master level students skillful by achieving the following goals to become useful for re-construction of National Environmental Economy.

2. To explore the renewable and non-renewable energy sources that fulfill the National Energy requirements.

3. For making Water potable, learning methodologies of Water Treatment Plant, water-softening techniques Osmosis techniques shall be procured.

4. For making safe Disposal of Wastewater from various development learning methodologies of Wastewater treatment technologies; like Wastewater treatment Plant, evaporation Ponds, Oxidation Ponds and in addition the design of Pipe network systems shall be procured.

5. For removing the Soil Waste Problem Cities, industries, town and rural areas, a very comprehensive learning methodologies can be extended; like understanding the Generation, collection, transferring and disposal techniques of Municipal Solid Waste, industrial Waste and Hospital Waste.

6. To make efforts to clean the Atmosphere, the learning methodologies; like understanding air pollutants and the design of Air pollution Control equipments shall be procured.

7. To make student capable to design the project in which he shall learn implementation of Environmental Managements system under the Umbrella of ISO-14000, Environmental Impact assessment and Strategic Environmental Assessment.

5.3 The Faculty

Director:
Prof. Dr. Khan Muhammad Brohi
Phone: 022-2772253 Ext: 7300

Professors:

Dr. Khan Muhammad Brohi
Ph.D. Japan

Dr. Rasool Bux Mahar
Ph.D. China

Associate Professors:

Dr. Abdul Razaque Sahito
Ph.D. Pakistan

Assistant Professors:

Mr. Muhammad Ali Memon
M.E. Pakistan

Dr. Sheeraz Ahmed Memon
Ph.D. Korea

Lecturers:

Mr. Imdad Ali Kandhar
M.E. Pakistan

Mr. Muhammad Safar Korai
M.E. Pakistan (On Study Leave for Ph.D.)

Mr. Azizullah Channa
M.E. Pakistan

Mr. Zulfiqar Ali Effendi
M.E. Pakistan (On Study Leave for Ph.D.)

Visiting Faculty:

Prof. Dr. Khanji Harijan
Ph.D. Pakistan

Prof. Dr. Muhammad Yar Khahwar
Ph.D. United Kingdom

Joint Degree Program

The Institute of Environmental Engineering & Management is offering joint Masters' degree program in Energy and Environmental Engineering.

5.4 Eligibility Criteria

Candidates having the First Division in only Bachelor of Engineering (B.E) or B.Sc (Engineering) in following disciples are eligible to apply:

- Environmental Engineering
- Energy & Environment Engineering
- Chemical Engineering
- Electrical Engineering
- Mechanical Engineering
- Mining Engineering
- Metallurgy and Material Engineering
- Industrial and Manufacturing Engineering
- Petroleum and Gas Engineering
- Textile Engineering
- Civil Engineering

5.5 Study Plan

The joint Masters' degree program in Energy and Environmental Engineering comprises of four semesters, two in each year. As per program all the students will study first year (First & Second Semester) in Mehran University of Engineering & Technology, Jamshoro Pakistan. For the second year, students will be given option to either to complete Second year (Third and Fourth Semester) in Mehran University or can go to Shenyang Aerospace University, China.

5.6 Courses Offered

M.E. (ENERGY AND ENVIRONMENTAL ENGINEERING)

	First Year Study Plan		
First Semester		**C.H. (Th./ Pr.)**	**Marks**
1	Energy & Environment	3-0	100
2	Air & Noise Pollution Control & Meteorology	3-0	100
3	Physico Chemical Processes in Environmental Engineering	2-0	50
	TOTAL	**8-0**	**250**
Second Semester			
1	Water & Wastewater Engineering & Treatment	3-0	100
2	Modeling in Environmental Engineering	2-0	50
3	Advanced EIA & Management	2-0	50
4	Occupational Health & Safety	2-0	50
	TOTAL	**9-0**	**250**

	Second Year Study Plan		
Third Semester		**C.H. (Th./ Pr.)**	**Marks**
1	Municipal & Hazardous Waste Management	3-0	100
3	Clean Energy Technology	3-0	100
3	Waste to Energy Processes	3-0	100
4	Statistical Product & Services Solution	0-1	50
	TOTAL	**9-1**	**350**
Forth Semester			
1	Thesis	6-0	---

5.7 Research Facilities

The institute has facilities of seven laboratories with latest instruments and are named below. These laboratories are adequately equipped to cope with the chemical and bacteriological analysis of water, wastewater and to monitor air quality. Laboratory equipment are also available of various unit operations & unit processes. Plans are under process to expand these laboratories to cover areas in analyzing of land and marine pollution problems. Facilities are available to acquire a mobile lab for doing spot analysis and monitoring of air, water and noise pollution. Joint research programs with various research organizations are available to address the applied nature problems posing threat to environment. Further research activities include the industry and local agency sponsored project for environmentally sound resource development.

1. Hi-Tech Laboratory
2. Water & Soil Pollution Control Laboratory
3. Solid Waste Management Laboratory
4. Air & Noise Pollution Control Laboratory
5. GIS & Computer Laboratory
6. Thermo Laboratory
7. Microbiology Laboratory

5.8 Seminar Library

The Institute also has seminar library available in its premises, which provides the option of latest Publications of books, Journals, Research reports in the field of Environmental Engineering.

5.9 Fee Structure

The fee structure of all the four semesters is given below:

First Year	
Semester	**Fee**
First Semester	Rs. 46740/-
Second Semester	Rs. 38740/-

Second Year			
AT MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO PAKISTAN		**AT SHENYANG AEROSPACE UNIVERSITY, CHINA**	
Semester	**Fee**	**Year**	**Fee**
Third Semester	Rs. 38740/-	Third & Fourth Semester (2nd Year)	20,000 Yuan RMB per year *
Fourth Semester	Rs. 19520/-		

* **Accommodation:** Free at China (Twin shared room)
Food expenses: About 200 US Dollar per month

GIS & Computer Lab

Soil & Water Testing LAB

Microbiology LAB

Hi-Tech LAB

Thermo LAB

Solid Waste LAB

6. REGULATIONS FOR MASTER DEGREE PROGRAMS

6.1 ELIGIBILIY:

To be eligible for admission to the Master Degree Program, a student must possess first class (minimum 60% marks or minimum CGPA = 3.0 out of 4.00) Bachelor's degree in an appropriate field of study. Moreover, the student must pass pre-admission test conducted by the University or his/her minimum GRE (General) Score is 50.

6.2 PROCEEDURE FOR ADMISSION

The applicant shall submit the application from duly completed in all respects along with the relevant documents by the last date fixed for this purpose. A student, if employed, will have to obtain No Objection Certificate from his/her employer before registration. Each application for admission will be processed separately by the concerned Directorate/Institute. 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 his/her conduct or progress in studies is not found satisfactory.

Students seeking admission are required to pay the fees and deposits at the time of admission as given in the prospectus duly approved by the University authorities. All fees paid are non-refundable except the library and laboratory deposits, which will be refunded after the student leaves the Institution.

6.3 TRANSFER OF CREDITS

Transfer of credits earned in other institutions may be approved in individual cases up to a maximum determined by the Equivalence Committee of the University.

6.4 DURATION OF STUDIES AND RESEARCH

The minimum period for completing all the requirements of a Master Program shall be one and half year (three semesters). The maximum period shall be three years. However, the ASRB may extend the period up to one year on account of any special circumstances on the recommendation of the supervisor/co-supervisor(s) and the concerned director/co-director.

Each Master Degree Program shall carry a number of approved courses and each course shall be assigned a number of Credit Hours. The Credit Hours per semester for each discipline shall be 09 to 12. A Master Degree Program shall have minimum 30 C.H. and maximum 36 C.H. including 06 C.H. of research work/thesis. There shall be two semesters in an academic year. The duration of teaching time in each semester shall be 16 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 subject of 3 C.H. per semester shall be 42 and minimum number of contact hours for a theory subject of 2 C.H. or practical of 1 C.H. per semester shall be 28.

The minimum requirement for each semester course shall be as follows:

(i) Assignments
(ii) Tests/Quizzes (minimum Two)
(iii) Mid Semester Examination
(iv) Final Semester Examination

The external examination system shall be carried on for Practical Viva Voce, Conduct of Initial and Final Seminar, and project/Thesis Examination.

6.5 GRADE EQUIVALENT

Grade	Grade Point	Marks			
		Theory		Practical	
		Max Marks 100	Max Marks 50	Max Marks 100	Max Marks 50
A	4.0	75 & above	37 & above	75 & above	37 & above
B	3.0	60 to 74	30 to 36	60 to 74	30 to 36
C	2.0	50 to 59	25 to 29	50 to 59	25 to 29
F	Below 2.0	Below 50	Below 25	Below 50	Below 25

- 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 and for practical/lab work 1 C.H. be considered as 2 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 three credit hours course then the Q.P of this course will be calculated as follows:

$$Q.P = 4 \times 3 = 12$$

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 during a particular semester. This is calculated by adding the quality points of all the courses taken divided by the total number of credit hours offered:

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

4. Cumulative Grade Point Average (CGPA)

The Cumulative Grade Point Average (C.G.P.A) is the expression describing the performance of a student in all semesters is determined by 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 each theory and practical course in a Semester shall be as follows:

Theory		
	Maximum Marks 100	Maximum Marks 50
Test(s)/Assignment(s)/Quizes	10	05
Mid Semester Examination	30	15
Final Semester Examination	60	30
Total	100 marks	50 marks

Practical/Lab Work		
	Maximum Marks 100	Maximum Marks 50
Attendance	10	05
Lab Evaluation Work	30	15
Semester Lab Examination	60	30
Total	100 marks	50 marks

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

The schedule of tests, mid semester and final semester examinations shall be as under:

1. Mid Semester Examination After 8 weeks
2. Final Semester Examination after 16 weeks

Final semester examination shall be of 3 hours duration for 3 C.H. courses and each question paper will contain 05 questions without any choice. Similarly, Final semester examination shall be of two hours duration for 2 C.H. course and each question paper will contain 03 questions without any choice. Final semester examination will be conducted from the whole course. Mid Semester examination will be of one and half hour duration for 3 CH course and each question paper will contain minimum two questions without any choice. The minimum passing marks in a subject will be 50%. A student should have at least 75% attendance to appear in the Final Semester Examination. In genuine cases, maximum 10% condonation in attendance shall be the discretionary powers of the Dean of the concerned faculty on the basis of an application to be scrutinized by the Director/Co-Director.

The procedure of conducting assignments/tests/mid semester examination/final semester examination and declaration of results shall be as follows:

(a) The scripts of all assignments will be returned and those of the tests and mid semester examination will be shown to the students after evaluation. Each blank page/gaps in the scripts will be stamped/lines drawn by the teacher concerned/invigilator.
(b) Mid semester and final examination will be conducted by the Examination Department in collaboration with the concerned Institute/Directorate.
(c) The question papers for the mid semester and final semester examination will be deposited by the teacher concerned with the Controller of Examination at least two days before the Examination.
(d) The marks of each test and mid semester examination will be displayed and solutions will be discussed in the class room immediately after evaluation. If any student is not satisfied with the evaluation, he/she may convey this to the Director/Co-Director of the concerned Institute/Directorate within 7 days of the result displayed and the matter then will be looked into by the Management Committee whose decision will be final. Any such objections after the expiry of 07 days will not be entertained. A copy of the marks of the tests and mid semester will be deposited by the concerned teacher after the announcement of the results.

(e) The Teachers will prepare 3 copies of the result of each course separately at the end of each semester (attendance, tests, mid semester examination, assignments and final semester examination) on the prescribed proforma and shall forward two copies to the Controller of Examinations through concerned Director/Co-Director.

(f) The cumulative result (including all the marks of attendance, assignments, tests, mid semester examination and final semester examination) of each semester of a year will be announced by the Controller of examinations.

(g) For the award of Master degree, a student must secure 60% (CGPA = 3) aggregate marks and must pass the final viva voce examination of the research project/thesis.

(h) If a student fails in one or more subjects, he/she shall be given one chance to appear in the supplementary examination. If the student fails again in the same subject(s) then ASRB may allow him/her one more chance to appear in the special supplementary examination based upon his/her written request and the recommendations of the concerned Director/Co-Director.

(i) If a student passes all subjects but secures less than 60% aggregate, he/she will be allowed to improve those subjects in which he/she has secured less than 60% (GPA < 3.0). Normally, more than one chance for improvement of grades will not be allowed. However, the ASRB may allow him/her one more chance of improvement of grades under special circumstances.

6.6 RESEARCH PROJECT / THESIS

(i) The minimum duration of Master degree research project/ Thesis will be 06 months with effect from the date of conduct of the Initial Seminar.

(ii) Each student will work on a project individually. Students will not be allowed to work in groups.

(iii)A student will be required to select a supervisor for his/her project. He/she may also select co-supervisor(s) if necessary.

(iv)The supervisor should be faculty member of MUET and his/her minimum qualification should be Masters in the relevant field.

(v) A qualified faculty member/Expert of any other University or Industry may be taken up as co-supervisor, if necessary.

(vi)Each student will prepare research proposal of his/her project in consultation with his/her Supervisor and Co-Supervisor(s) if any. A student may select a supervisor and Co-Supervisor(s) on his/her own choice. However, the concerned Director/Co-Director reserves the right to change the Supervisor/Co-Supervisor, if necessary.

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

(vii) The supervisor/Co-Supervisor will scan the research proposal of the student through Higher Education Commission (HEC) approved software for plagiarism and will submit the duly signed and stamped hard copy containing similarity index to the concerned Director/Co-Director.

6.7 CONDUCT OF INITIAL SEMINAR

(i) A student will be eligible to give Initial Seminar of his/her project if his/her minimum GPA in the first semester is not less than 3.0.

(ii) An eligible student will fill up the Research Proposal Proforma and pay the required processing fees through bank challan available in the office of the concerned Director/Co-Director. Cash payment will not be accepted in any case.

(iii) The Research Proposal Proforma should be signed by the student himself/herself, his/her supervisor and co-supervisor(s), the Chairman/Chairperson of the concerned Department, the Director/Co-Director of the Institute 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). 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 will be announced by the concerned Director/Co-Director.

(vi) The maximum number of Initial/Final Seminars conducted in one day will not exceed 10.

(vii) The student will prepare a presentation of 10 – 15 minutes duration under the guidance of his/her supervisor/Co-Supervisor(s).

(viii) The Initial seminar will be evaluated by the following:

(a) External examiner to be appointed/approved by the Competent Authority.

(b) The Dean of the concerned faculty or his/her nominee.

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

(d) At least one Internal examiner to be appointed/approved by the Competent Authority.

(viii) The Evaluations of the experts and ASRB members will be submitted to the ASRB for final approval/decision.

(ix) In case the Initial Seminar is not approved by the ASRB, the student will be asked to deliver repeat seminar by incorporating the suggestions/comments/observations of the experts and ASRB members.

(x) In normal circumstances, more than two repeat seminars will not be allowed. However, the ASRB may allow a student to give third repeat seminar under special circumstances.

6.8 CONDUCT OF FINAL SEMINAR

(i) A student will be eligible to give final seminar if:

(a) His/her CGPA in first and second semester is not less than 3.00 (out of 4.00).

(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 has submitted one hard copy (loose bound/Spiral binding) of the thesis, prepared as per approved guidelines.

(ii) The student will prepare a presentation of 15 to 20 minutes duration with the consultation of his/her supervisors.

(iii)The student 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.
(v) The student will give final seminar before the experts and ASRB members.
(vi)The final seminar will be evaluated by the following:
(a) The External Examiner to be appointed/approved by the Competent Authority.
(b) The Dean of the Concerned Faculty or his/her nominee.
(c) At least one member of the ASRB other than the Dean of the Concerned faculty.
(d) At least one Internal Examiner to be appointed/approved by the Competent Authority.
(vii) The Director/Co-Director will submit the evaluations of the experts and ASRB members to ASRB for final approval.
(viii) If ASRB approves the final seminar, the student will be asked to submit the final version of the thesis book.
(ix)If ASRB does not approve the final seminar, the student will be asked to give another final seminar by incorporating suggestions/corrections/comments/observations of the experts and ASRB members.
(x) Normally more than two repeat final seminars will not be allowed. However, the ASRB reserves the right to allow third repeat seminar in special cases.

6.9 SUBMISSION OF THESIS BOOK AND CONDUCT OF VIVA VOCE EXAMINATION

(i) The student will submit three hard copies (loose bound/Spiral binding) and one soft copy of the thesis book to the concerned Director/Co-Director along with the processing fees of the thesis evaluation.
(ii) Student will also submit the fees for anti plagiarism services.
(iii)The Director/Co-Director will send the softcopy of the thesis 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.
(iv)If the scanning report has similarity index less than or equal to 19% and no any single source has a similarity index greater than or equal to 5%, the thesis will be accepted for viva voce examination. Otherwise it will be returned back to the student. This procedure will be repeated until minimum similarity index as defined above is met.
(v) The supervisor will propose a panel of three external and three internal experts for the conduct of the viva voce examination.
(vi) The concerned Director/Co-Director will submit this panel of experts to the competent authority for approval of one External and one Internal Examiner.
(vii) 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 and the scanning report of the thesis.
(viii)The Controller of Examinations will send copies of the thesis to the approved examiners for their evaluation and conduct of final viva voce examinations.
(ix) The final viva voce examination will be conducted by the external and internal examiners in presence of the concerned Director/Co-Director and Supervisor/Co-Supervisor(s).
(x) If the examiners recommend that the student is successful at the viva voce examination, he/she may be declared to have passed the Master Degree examination. In case of failure, a second examination may be given on the recommendation of the thesis examiners. In normal circumstances, no student shall be permitted a third examination.

However, the ASRB may allow the third examination under genuine cases/special circumstances.

(xi) The hard bound copies and evaluation report of the examiners duly signed by all concerned will be submitted to the Controller of the Examination for announcement of the result.

6.10 MANAGEMENT COMMITTEE

Each Directorate/Institute will have a management committee comprising the following:

- The Director
- The Chairman/Chairperson/Focal Person / Director/Co-Director of the concerned Department/Institute.
- Two senior most faculty members (other than the Chairman/Chairperson) of the concerned department/institute.

This committee will be responsible for selection of students for any financial assistance assess and will also monitor the progress of the students during the semester and the results of all the course work examinations. In case of any discrepancy in the results, during scanning process, the concerned committee will seek approval of the competent authority for rechecking the scripts by a subject expert (other than the subject teacher)

7. REGULATIONS FOR M.PHIL. LEADING TO PH.D. DEGREE

Introduction

These Regulations shall apply to those postgraduate students, who want to register initially for a M.Phil. degree program and later on, transfer to Ph.D. degree program. This program of studies and research shall be called M.Phil. leading to Ph.D. degree program.

Eligibility

To be eligible for admission to the M.Phil. leading to Ph.D. degree program, a student must possess first class Bachelor's degree (4 years university education) in the relevant field from Mehran University of Engineering and Technology or any other university recognized by Mehran University of Engineering and Technology for this purpose. He/She is further required to be proficient in English Language, and be physically and mentally fit for the study.

The GAT (General) test conducted by the NTS with a minimum 50% cumulative score is required prior to admission in the M.Phil. leading to Ph.D. degree program.

Registration

A student desiring to enroll for this program shall apply for registration and proceed to complete all the formalities required.

M.Phil. Course and Research Work

Course Work

For strengthening student's knowledge in his/her field of research work and for enabling him/her to carry out research properly, he/she is required to study the courses of 24 credit hours

and pass the examinations with at least 60% marks (aggregate), whenever these courses are offered in the University.

Transfer of credits earned in other Institutions may be approved in individual case up to a maximum determined by the Equivalence Committee.

Research Work

Each student has to prepare his/her research proposal in consultation with his/her supervisor and apply on prescribed form to the concerned director who will process his/her application and forward it to the Advanced Studies and Research Board (ASRB) for approval. The ASRB will also approve the supervisor and, if needed, co-supervisor in consultation with supervisor. After approval of his/her research proposal by the ASRB, the student shall be required to give initial seminar before the ASRB.

Before a candidate is finally registered for M.Phil. leading to Ph.D. degree program, the research proposal is to be evaluated by at least three experts in the relevant field, one from within the country and the two from technologically/academically advanced countries abroad.

After completing all the formalities for registration, including initial seminar, the student shall proceed with his/her research work under the guidance of his/her supervisor in accordance with the approved Regulations for the M.Phil. degree program, and deliver intermediate seminars and submit progress reports as required by the ASRB.

Transfer to Ph.D. Degree Program

Supervisor's Consent

After completing the course work, carrying out research for about two years after registration and passing GRE/GAT subject test, a student desiring to transfer to Ph.D. program shall approach his/her supervisor to seek his/her consent for changing his/her registration from M.Phil. to Ph.D. program. If the supervisor is convinced that the research work done by the student shows potential for extending it to the Ph.D. degree level, he/she may advise the student to apply for change of registration for transfer to the Ph.D. degree program otherwise the student shall have to continue his/her research work for getting M.Phil. degree.

Application

The student shall apply for change of registration from M.Phil. to Ph.D. program on the prescribed form, pay the processing fee and resubmit his/her research proposal for Ph.D. degree along with a detailed report of the research work already done by him/her, through his/her supervisor to the Director of Postgraduate Studies or the Director of the concerned Institute, as the case may be, who will in turn submit the same to the ASRB for evaluation and approval.

Evaluation of Research Work

The report of the research work done by the student will be considered by the ASRB and will also be sent to the same experts within the country and abroad who had originally evaluated the research proposal for evaluation with regard to its originality and scope for continuation for Ph.D. degree, provided that if he/she is not available, the ASRB shall appoint a new evaluator. The student shall also deliver a seminar on his/her research work. If a favourable report is received from the evaluators, the student will be allowed by the ASRB to continue his/her

research work for Ph.D. degree. However, if the research work is not considered by the evaluators to be fit for its continuation for Ph.D. degree, the student shall have to complete the research work and submit his/her thesis for M.Phil. degree.

Other Formalities

After approval of the ASRB, the student must complete all the other formalities required for a Ph.D. student, including payment of the required fee etc, as per the approved Regulations for Ph.D. degree program.

Ph.D. Course and Research Work

The student shall complete the course work of at least 18 credit hours followed by a comprehensive examination and continue with his research work diligently and regularly, submit progress reports and deliver seminars as required under the approved Regulations for the Ph.D. degree program.

Duration of Program

The minimum duration for completing all the requirements for the full time and part time M.Phil. leading to Ph.D. degree program shall be four years and six years, respectively. The maximum duration for completing all the requirements for the M.Phil. leading to Ph.D. degree program will be determined by the ASRB for each individual student considering all the relevant circumstances as well as the recommendation of the student's Supervisors.

Other Regulations

All other regulations for the approved Ph.D. degree program, such as payment/refund of various fees, approval/change of thesis topic, completion of course work, passing comprehensive examination, delivery of seminars, submission of progress reports, leave of absence, no objection certificate/study leave from employer, preparation and evaluation of thesis, publication of research paper, conduct of thesis examination, declaration of result, award of degree etc. shall also apply to the M.Phil. leading to Ph.D. degree program.

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, and, unless specifically stated otherwise, the amended Regulations shall apply to the already registered students as well as to the new students.

8. PhDs offered by the Directorate of Postgraduate Studies, Institute of Environmental Engineering & Management, Institute of Petroleum and Natural Gas Engineering, Institute of Water Resource Engineering & Management, Institute of Information and Communication Technologies and Mehran University Institute of Science, Technology and Development.

8.1. DIRECTORATE OF POSTGRADUATE STUDIES

- Applied Mathematics
- Architecture
- Chemical Engineering
- City and Regional Planning
- Civil Engineering
- Coal Engineering
- Construction Management
- Energy System Engineering
- Geotechnical and Highway Engineering
- Industrial Engineering and Management
- Manufacturing Engineering
- Materials and Metallurgical Engineering
- Mechanical Engineering
- Mining Engineering
- Structural Engineering
- Textile Engineering

8.2. INSTITUTE OF ENVIRONMENTAL ENGINEERING AND MANAGEMENT

- Environmental Engineering

8.3. INSTITUTE OF PETROLEUM AND NATURAL GAS ENGINEERING

- Petroleum Engineering

8.4. INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

- Bio-Medical Engineering
- Electronics Engineering
- Computer Systems Engineering
- Software Engineering
- Electrical Engineering
- Telecommunication Engineering

8.5. MEHRAN UNIVERSITY INSTITUTE OF SCIENCE, TECHNOLOGY AND DEVELOPMENT

- Science, Technology and Innovation Policy
- Management Sciences

8.6 Eligibility and Procedure for Admission

To be eligible for admission to the Ph.D. degree program, a student must possess first class (Minimum 3.0 CGPA) Master's degree (06 years university education) in the relevant field from Mehran University of Engineering and Technology or any other university recognized by Mehran University of Engineering and Technology for this purpose. He/She is further required to be proficient in English Language, and be physically and mentally fit for the study.

At least 60% percentile Score in ETS GRE subject test or 60% Cumulative Score in NTS GAT subject test or 70% percentile score in GRE (Subject) type test, in the area of specialization chosen at PhD level, conducted by the university (where ETS GRE subject teat is not available) is required prior to admission in the PhD program.
The applicant must submit the application form duly completed in all respects, along with the relevant documents by the last date fixed for this purpose. The student may be registered for a full time or part time program. A full time student, if employed, will have to obtain study leave from his/her employer before registration. A part time student if employed will submit a No Objection Certificate (NOC) from his/her employer before registration. 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. Each application for admission will be processed separately by the Graduate Committee. The Committee reserves the right to refuse admission to any applicant without assigning any reason, or cancel the admission of a student at any stage if his/her conduct or progress in studies is not found satisfactory.

Each student is required to register him/her self at the University in the field/discipline in which he/she takes courses, does research, and receives degree. Tuition and other fees must be paid at the time of registration.

8.7 Duration of Program

The minimum duration for completing all the requirements for the full time and part time Ph.D degree program shall be three years and five years, respectively.

The maximum duration for completing all the requirements for the full time and part time Ph.D degree program shall be five years and seven years respectively. However, the ASRB may extend the period up to two years on account of any special circumstances on the recommendation of supervisor.

8.8 Course and Research Work

COURSE WORK

For strengthening student's knowledge in his/her field of research work and for enabling him/her to carry out research properly, he/she is required to complete the course work of at least 18 credit hours followed by a comprehensive examination.

Transfer of credits earned in other Institutions may be approved in individual case up to a maximum determined by the Equivalence Committee.

Courses Offered

COMPULSORY COURSES

S.NO.	Subject	C.H.	Marks
1.	Mathematical Modelling and Simulation	04	100
2.	Research Methodology	02	50
3.	Independent Study	03	75
	Total:	**09**	**225**

OPTIONAL/ELECTIVE COURSES*

S.NO.	Subject	C.H.	Marks
1.	Elective Course – I	-	-
2.	Elective Course – II	-	-
3.	Elective Course – III	-	-
	Total:	**09**	**225**

*Considering the background of the student vis-à-vis the field of his research work, the student's Supervisor will propose these courses. The courses will be approved by the Board of Studies, Advanced Studies and Research Boar, and the Academic Council.

RESEARCH WORK

Each student has to prepare his/her research proposal in consultation with his/her advisor and apply on prescribed form to the concerned director who will process his/her application and forward it to the ASRB for approval. The ASRB will also approve the advisor and, if needed, co-advisor in consultation with advisor. After approval of his/her research proposal by the ASRB, the student shall be required to give initial seminar before the ASRB.

Before a candidate is finally registered for Ph.D. degree, the research proposal is to be evaluated by at least three experts in the relevant field, one from within the country and the two from technologically advanced countries abroad.

After completing all the formalities for registration, including initial seminar, the student shall proceed with his/her research work under the guidance of his Supervisor and give minimum two progressive seminars during the studies.

After completion of research, the student will submit draft copy of thesis for conducting the plagiarism test. When the thesis found authentic (free of plagiarism), the candidate will be allowed to deliver final seminar before the ASRB for approval of his/her research work and submission of thesis. The thesis will be sent to the same experts within the country and abroad who had originally evaluated the research proposal, provided that if he/she is not available, the ASRB shall appoint a new evaluator.

The candidate will be allowed to appear in the viva-voce examination to defend his/her thesis after incorporating the remarks of evaluators and submitting his/her modified thesis through his/her Supervisor. The report of the thesis examiner appointed by the ASRB should be unanimous for the award of the degree. If the examiners recommend that the student 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 given on the recommendation of the examiners. No student will be permitted a third examination.

Acceptance/publication of at least one research paper in an HEC approved journal is also essential for the award of Ph.D. degree.

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, and, unless specifically stated otherwise, the amended Regulations shall apply to the already registered students as well as to the new students.

9. SUPPORT FACILITIES FOR STUDENTS AND OTHER COMPONENTS

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:

9.1 Residential Accommodation

Eight hostels including two for female students, are available for the undergraduate students accommodation. The hostels can accommodate a total of 1150 students. Since the available seats for the upcoming batch is very limited, the University is not able to accommodate the students of first year. The students are advised to arrange the private accommodation. Overall, the preference is given to the most needy students who belong to farther areas of the province.

All the students who are interested in hostel accommodation can apply through a prescribed form which is available in the Provost office. All the residents have to follow strictly the hostel rules and regulations. The hostels are managed by the Provost Hostels, Additional Provost Hostels, Deputy Provost Hostels and Wardens.

For any further information, please contact:

Mr. Ghulam Abbas Mahar,
Incharge Provost (Hostels),
Telephone No. 022-2772299

9.2 Library Facilities

The Mehran University of Engineering & Technology Library & Online Information Center contains more than 125000 books related to Engineering Science and Technology. Access to 29 E-databases for electronic journals and e-books are available on-line within the university campus and outside the campus under Digital Library Program; a Project of Higher Education Commission, most of these resources are available in full text.

There are more than 19000 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. This service is further enhanced by cooperation among Muslim Countries under COMSTECH.

The Mehran University of Engineering & Technology Library & Online Information Center also offers following services:

* In MUET Library & Online Information Center students and faculty members are also provided internet facility to use computer for their project work for which PCs are installed in the Online Information Center of the library with a network printer and photocopier.

* The Catalog of books is computerized and accessible through library of congress gateway http://www.loc.gov/z3050 serving one point access interface for books catalog, full-text electronic journals and e-books on web.

* There are also a blogs http:/www.muet/facultycoordination.blogspot.com to give the access of books recommended in teaching plan, another blog http://www.mueteresources.blogspot.com to give the access of e-books, Journals, video lectures, dictionaries and encyclopedias etc., and http://muetdigitallibrary.blogspot.com E-books, Journals, Tutorials and Thesis's guidance.

* The MUET Library & Online Information Center also offers Wi-Fi service.

* The library is heavily used by the students, faculty members and researchers and is open from 8:00 am to 9:00 p.m. and also on Sunday during examination period. Professional staff available at service points to meet needs of the readers. Besides the MUET Library & Online Information Center individual departments have established their own seminar libraries, which cater to the specific needs of the departments. A union catalogue of books available on Campus is also functional. Library is connected to all departments through fiber optic network/internet giving access to CD and DVD Rom databases available in the Library also.

9.3 Information and Communication Processing Centre

Information provisioning is recognized as the most integral service in Education domain that underpins all departmental and interdepartmental activities, Information Communication and Processing Center (ICPC) is instituted for the purpose. The centre utilizes high speed Optical Fiber connectivity to ensure access to information at lightning speed. Equipped with latest devices and servers; the Centre is dedicatedly working to provide 24hr data and voice services to Admin block, departments and Hostels.

To encourage Research and development related activities between universities and uplift MUET at National level, the centre connects MUET with fifty two (52) other universities through PERN (Pakistan Educational Research Network). Besides the students are ensured unhampered services through VPN accounts, which is provided on request, to work from their homes for 24 hrs.

Following are some of the facilities student would be able to avail:

- High Speed Internet connection with backbone of 100MB.

- High speed network laid entirely on Fiber Optics.
- 24x7x365 hrs Voice Exchange/Intercom services.
- Digital Library Services through PERN.
- HEC online journals access through PERN.
- VPN service for students working from their Homes.
- Online Courseware / Material and presentations.
- Hardware and Software resources sharing.
- Video Conferencing System (Lectures and Presentations sharing) between all Universities of Pakistan through PERN.
- Provide Email accounts on MUET domain.
- Free Access to Genuine Microsoft Software (Operating System and Application Software).

Engr. Saleem Ahmed Memon
Additional Director
Information Communication and Processing Centre (ICPC)
Phone: (022) 2772250-73 Ext: 2090

9.4 Medical Assistance

A part-time dispensary has been established in one of the hostels for the resident students, which is manned by a qualified doctor and a dispenser. Adequate quantity of essential medicines are also available in the dispensary for the minor ailments. Major sickness problems are referred to Liaquat University Hospital, which is quite nearby. An ambulance is also available for the sick students to take them to the hospital in any emergency.

9.5 Transport Facilities

The University deploys buses for the use of students on various routes between the Campus and Hyderabad/Qasimabad/Latifabad/Kotri. Students have to pay nominal transport charges on yearly basis for the use of this facility.

9.6 Sports Facilities

The Directorate of Sports is responsible to entertain the students of this University by arranging Indoor and Outdoor sports events i.e. Inter Hostel for hostler students and Inter Department for department competitions.

The University also organizes and participate Interuniversity Sports Events in a large number. Previously lot of the University students has remained Gold, Silver and Bronze Medalist. The University sports teams not only participate in Sindh Universities Sports Gala event but this University has also organized the same event at a high level.

The newly joining students can participate in Inter Department, Inter Hostel and Inter University events particularly in Basketball, Shooting ball, Squash, Table Tennis, Badminton, Athletics, Cricket, Football, Hockey, Tug of War, Handball, Malh, Chess, Tennis etc. In addition coaching camps for the training of students/players are arranged game wise, the

selection of the university sports teams is purely consist on merit and performance of the layers. The sports Material for playing games on behalf of this university will be provided by the directorate of sports.

This University also provides sports material to all the hostels through the Provost Hostels for daily practice. This university organizes Inter University Sports Events between 03-04 universities under its own objectives.

These sports are organized and managed by the Directorate of Sports, which is headed by:

Engr. Najeeb-ur-Rehman Channa
Director Sports,
Phone: 0221-771530 Mobile: 0300-9373574

9.7. Financial Aid:
Student Financial Aid Office (SFAO):

(Established in August, 2006)

Many of students are admitted in this University from various rural community areas and they belong to poor or middle class families, while it is noted that today's expenditures on education have become very high, consequently it is difficult for them to pursue their education due to financial constraints.

Mehran University of Engineering and Technology, Jamshoro by realizing the continuous rise in educational exposes, has taken initiative for providing financial relief to meritorious and deprived students with the financial assistances/need based scholarship programs. In this regards, Mehran University of Engineering & Technology established the "Student Financial Aid Office" (SFAO) in August 2006, to elevate the socio-economic position of the needy & deserving students by providing access to quality education through Need-based and Merit Scholarships.

Now all Scholarships/financial Aid Cases are routed through Student Financial Aid Office (SFAO). A centralized record of all students getting any Financial Aid is kept in the Student Financial Aid Office (SFAO).

Persons to be contacted:

1. Prof. Dr. Tauha Hussain Ali
   Focal Person SFAO

2. Mr. Saifullah Hassan,
   Assistant Director, (SFAO)
Phone # + 92 22 2772701
Fax # + 92 22 2771274

9.8 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:

Dr. Muhammad Moazam Baloch,
Director,
Industrial Liaison,
Ph: 022-2771425

9.9 Students' Advisory Committee

Mehran University Students' Advisory Committee was formed to bridge the gap between administration, teaching community and students. Committee helps students to organize academic and social activities and also to resolve their academic and legal grievances.

1. **Prof. Dr. Khan Muhammad Brohi**
   Director, Institute of Environmental Engineering & Management,
   Advisor Students' Affairs
   Phone 0222772753

2. **Prof. Tahseen Hafiz**
   Chairman, Department of Software Engineering
   Deputy Advisor Students' Affairs,

3. **Prof. Ghulam Abbas Mahar**
   Assistant Professor,
   Department of Basic Sciences & Related Studies,
   Deputy Advisor Student' Affairs

4. **Prof. Hafiz Arshad Ali Memon**
   Assistant Professor,
   Department of Civil Engineering
   Deputy Advisor Students' Affairs

9.10 International Membership of the University

1. Association of Commonwealth Universities (ACU) U.K- 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), U.K 2000-2001.
5. Community of Science (COS) USA-2001

6. IEEE Inc USA
7. APQN – Asian Pacific Quality Network – 2007.

9.10.1 The University has signed Memorandum of Understanding with the following Foreign Universities/Institutes during the years 2004-2012.

S.No.	Name of the Institute	Date of Agreement
1.	University of Nottingham, U.K (Original)	28.4.2005
	University of Nottingham, U.K (this revised agreement applies to the University of Nottingham's campuses in the United Kingdom, china &Malaysia)	30.9.2011
2.	Montan Universitaet, Leoben, Republic of Austria	07.06.2005
3.	University of Leeds, U.K.	28.6.2005
4.	Colorado State University, Fort Collins, Colorado, USA	15.08.2005
5.	Kyushu Institute of Technology, Japan	27.10.2005
6.	University of CentralFlorida, USA	23.08.2006
7.	Middle East Technical University Ankara, Turkey	13.09.2006
8.	Pakistan Space & Atmosphere Research Commission (SUPARCO), Karachi, Pakistan	27.02.2007
9.	University of Illinois, at Urbana, Champaign, USA	28.03.2007
10.	University of Exeter, U.K	31.03.2007
11.	Aalborg University Esbgerg, Denmark	09.06.2007
12.	Benazir Bhutto Shaheed Youth Development Program, Works & Services Department, Government of Sindh, Pakistan	28.07.2008
13.	University of Southampton, U.K	06.08.2008
14.	Asian Institute of Technology (AIT), Bangkok, Thailand	15.08.2008
15.	University of Bedfordshire, UK	20.11.2008
16.	Benazir Bhutto Shaheed Youth Development Program, Irrigation & Power Department, Government of Sindh, Pakistan.	12.01.2009
17.	University of Pittsburgh, Pennsylvania, USA	16.07.2009
18.	Global University, Beirut, Lebanon	26.10.2009
19.	Faculty of Engineering, University of Southern Denmark, Denmark	27.10.2009
20	City University, London, UK (Original)	07.12.2009
	City University, London, UK (Original)	05.10.2011
21.	The United States Educational Foundation in Pakistan, Islamabad	11.12.2009
22.	Charles Sturt University, Australia	18.06.2010
23.	Isra University, Hyderabad, Sindh, Pakistan	16.08.2010
24.	Alborg University, Center for Teleinfrastruktur (CTIF), Denmark	05.11.2010
25.	Pakistan Council of Scientific & Industrial Research, Islamabad	28.01.2011
26.	Brunel University, West London, UK.	31.03.2011
27.	Technische Universitat Darmstadt, Germany	20.08.2011
28.	University of Malaya, Malaysia	20.09.2011

MEHRAN UNIVERSITY ENGINEERING & TECHNOLOGY, SHAHEED ZULFIQAR ALI BHUTTO KHAIRPURMIR'S CAMPUS

10. MEHRAN UNIVERSITY ENGINEERING & TECHNOLOGY, SHAHEED ZULFIQAR ALI BHUTTO KHAIRPURMIR'S CAMPUS

10.1 Introduction

In order to promote engineering education in the interior region of the province and to reduce the supply-demand gape, the Government of Sindh vide its notification No. SO(C-IV) SGA&CD/4-29/09 dated 2nd April, 2009, established a constituent College of Mehran University of Engineering and technology, Jamshoro named as Mehran University College of Engineering & Technology, Khairpur Mir,s. The college has been further upgraded as Campus of MUET, Jamshoro vide Notification No.Estt(Teach:)/-30 of 2013 dated 19-02-2013.The MUET, Khairpur Mir's Campus is offering Bachelor of Engineering Degree in four disciplines viz: Civil Engineering, Electrical Engineering, Mechanical Engineering and Petroleum & Natural Gas Engineering.

The main objectives of the establishment of the College/Campus are as under:

- To provide science and technology education to the people of interior Sindh at their door step.
- To upgrade the technical skills of the people of Sindh.
- To meet the national demand for qualified engineers required for national industrial development.
- To promote the rural talent, enabling it thereby to participate in mainstream of national growth.

The number of students admitted to the First Year classes in all four undergraduate disciplines is 240 out of which 80 candidates are admitted under the self finance scheme. Mehran University of Engineering & Technology Khairpur Mir's campus offers undergraduate programme in four disciplines, viz. Civil Engineering, Mechanical Engineering, Electrical Engineering and Petroleum & Natural Gas Engineering. Being a constituent campus of Mehran University of Engineering & Technology, the campus adopts the same teachings system, courses of studies, rules and procedures for admissions, examination system and student conduct and discipline as those are practiced by the university.

The campus headed by the Pro-Vice Chancellor is working under the administrative and academic control of Mehran University of Engineering & Technology Jamshoro.

ME degree programs in Electrical Power Engineering (EPE) and Energy Systems Engineering are being offered at Khairpur campus.

10.2 Officers of the Campus

1. Engr. Ghulam Sarwar Kandhir
   Pro-Vice Chancellor, MUET, Khairpur Campus

2. Mr. Atta Muhammad Phul
   Associate Professor/Chairman
   Civil Engineering Department

3. Dr. Hassan Ali Durani
Professor/Chairman
Mechanical Engineering Department

4. Mr. Shakir Ali Soomro
Assistant Professor/In-charge Chairman
Electrical Engineering Department

5. Mr. Asadullah Memon
Lecturer/In-charge Chairman
P & NG Engineering Department

6. Dr. Rafique Ahmed Memon
Asstt, Professor/In-charge Chairman
Basic Sciences & Related Studies

7. Mr. Mujeeb Iqbal Soomro
Assistant Controller Examination

8. Mr. Waqas Ali Channa
Deputy Director Finance

9. Mr. Muhammad Memon
Sr. workshop instructor/In-charge Transport

10. Mr. Allah Bachayo Memon
Assistant Librarian

11. Mr. Imtiaz Ali Solangi
In-charge Establishment

12. Mr. Faiq Gul Memon
Assistant Director QEC/In-charge MIS

13. Mr. Asif Hussain Shah Jillani
Instructor Sports

14. Mr. Nadeem Ahmed Sarhandi
Estate cum Security Officer

11. FEES STRUCTURE AND FINANCIAL ASSISTANCE

S.No	ITEM	ME/MS/MBA		M.Phil		Ph.D	
		National	Expatriate	National	Expatriate	National	Expatriate
1.	Prospectus	2500	2500	2500	2500	2500	2500
2.	Registration	4000	8000	6000	10000	8000	15000
3.	Enrolment	1000	2000	1000	2000	1000	2000
4.	Caution money deposit (refundable)	2000	5000	2000	5000	2000	5000
5.	Library deposit (refundable)	2000	5000	2000	5000	2000	5000
6.	Tuition (Per Semester)	36000	$1000	36000	$1000	36000	$1000
7.	Field visits & other activities	1000	2000	1000	2000	1000	2000
8.	Research Journal (per semester)	300	300	500	500	500	500
9.	Course Examination (Per exam.)	1025	1025	1000	2000	1000	2000
10.	Marks Certificate	300	600	300	600	300	600
11.	Transcript fee	1215	2430	1215	2430	1215	2430
12.	Research Proposal Processing Fee	1000	2000	1500	3000	2000	4000
13.	Thesis evaluation	4000	8000	6000	8000	8000	16000
14.	Degree in Person / Absentia	2000	4000	2000	4000	3000	5000
15.	Re-entry fee	3,000	5,000	3,000	5,000	3,000	5,000
16.	Transport Charges (per semester)	Boarder Non Boarder	750 1440	Boarder Non Boarder	750 1440	Boarder Non Boarder	750 1440
NOTE: The graduate students residing in the student hostels will also have to pay hostel charges, which will be fixed according to the university policy							

Financial Support

- Bursary up to 50% in tuition fees are available for meritorious and needy students
- Fully paid teaching assistance ships are available in every program
- Various financial assistance ships are available for faculty members, MUET employees and their dependents
- Fully funded PhD scholarships are available from endowment scheme and HEC-BC and HEC Funded Projects
- Fully funded M.E. Scholarships (for research students) are available from HEC-BC and HEC Funded Projects

In addition, following external scholarships may also be available to students from time to time

a. Indigenous Scholarship by Higher Education Commission
b. HEC Need Based Scholarship
c. National Bank of Pakistan – Student Loan Scheme – Facility of Interest free loan to the students of public sector universities
d. Erasmus Mundus scholarship opportunities to study under exchange program in Europe
e. PM's Tuition fee reimbursement scheme for less developed areas
f. Pakistan Engineering Council Scholarship
g. Pak USAID Merit and Need based Scholarship for financially disadvantaged students at graduate level

U.S.-Pakistan Center for Advanced Studies in Water

Introduction

The United States Government through United States Agency for International Development (USAID) and Government of Pakistan through the Higher Education Commission (HEC) have partnered together to create state of art centers for advanced studies. The USAID-funded Pakistan Centers for Advanced Studies (PCAS) have been designed by the United States Government and Government of Pakistan to support Pakistan's economic development by strengthening universities and encouraging applied research. The USAID-funded PCAS have been designed to leverage economic development in Pakistan through applied research in energy, water, and agriculture and food security.

The Pakistan Center for Advanced Studies in Water (PCAS-W) has been established at the Mehran University of Engineering and Technology (MUET) Jamshoro under the Cooperative Agreement signed with USAID on Dec. 12, 2014 for five years. The USAID-funded Pakistan Center for Advanced Studies MUET in water is a state of the art and modern applied research center. The USAID-funded PCAS-W is a world class education and applied research center dedicated to resolving Pakistan's water crises through applied research, developing specialist human resource and technologies; academia-industry collaboration; and policy formulation. The centers will generate cost-effective and sustainable solutions to Pakistan's challenges related to water and educating the next generation of scientists, engineers, and policy makers through innovative academic programs in water that are focused on applied research to solve Pakistan's contemporary problems. The USAID-funded Pakistan Center for Advanced Studies MUET in water is encouraging and empowering women scientists and researchers to actively participate

in applied research to solve Pakistan's contemporary problems. The PCAS-W will receive assistance in technical issues and capacity building from U.S. Partner University (University of Utah).

PCAS-W project has following five main components:

1. Governance of the CAS and the Higher Education
2. Curriculum Reform
3. High Quality Applied Research
4. Graduate and Post Graduate Training
5. Sustainability through Industry/Private Sector Links

The center will start Masters/Ph.D. programs in four areas, tentatively designated as: (i) Hydraulics, Irrigation and Drainage -HID (ii) Integrated Water Resources Planning and Management- IWRPM (iii) Environmental Engineering - ENVENG and (iv) Water, Sanitation and Health- WASH. MUET's aim is to become a leading center of excellence in the water sector. PCAS-W will seek collaboration of U.S. Partner University for technical issues and capacity building. Strong collaboration with partner PCAS Universities and HEC in Pakistan will also ensure institutionalization and sustainability of the PCAS-W beyond the five-year program. One of PCAS-W major goals is to achieve gender equality in the program. The mission of PCAS-W is to train present and future faculty, young scientists, engineers, managers and other stakeholders with state of the art techniques and cutting edge knowledge in the water sector. In this program 7 labs with state of the art facilities are being established in PCAS-W. This will assist in conduct good applied research projects and forming linkages with industry and the private sector.

Overall Objectives

· Increase access for talented, economically and/or culturally disadvantaged students, in the disciplines of water;

· Establish governance structures for sustainability and improved capacity of the PCAS-W

· Improve relevance and quality of curricula, strengthen use of effective teaching methods, and upgrade graduate programs; and

· Apply relevant research to meet client (industry, civil society, government) needs.

Program Targets

· At least 250 degrees awarded by PCAS-W in five years of the project to students who receive PCAS-W funded scholarships, resulting in more degree holding technical experts in field of water resource management.

· In five years of the project, at least 200 faculty and students participated in exchanges to the U.S. that will result in university faculty with enhanced teaching and mentoring skills and students with stronger technical and research skills.

· At least 50% of PCAS-W graduates employed in a field related to water activities.

· At least one strong American-Pakistani university linkage established that significantly improves teaching and research and improves how universities interact with and receive funds from the business community in the water management sector.

· A wide regional diversity of students trained of whom at least 50% are economically disadvantaged.

· Percentage of female student and faculty participation in CAS-W activities exceeds by 15% the present rate of participation at the hosting university, with the objective of reaching 50% female participation in CAS-W activities.

· At least 50 advanced research projects conducted by PCAS-W in five years.

· At least 50 CAS-W students placed in internships with private sector entities.

· The Council for Research and Policy think tank made operational.

· At least five public-private partnerships (PPPs) or Global Development Alliances (GDAs) established through PCAS-W.

· Three professional certification degrees or programs established at PCAS-W.

· At least 20 PCAS-W courses that feature a modern, relevant Pakistan-centric curriculum that meets international standards.

· A dedicated library established to support PCAS-W priorities.

· Specialized research/laboratory facilities at MUET established or upgraded to include the use of innovative and appropriate Information and Communications Technology that supports the service and problem solving focus of the center.

· At least 20 applied research awarded to MUET faculty and researchers and/or other Pakistani universities or Research and Development organizations related to the water resource management and water technologies.