U.S. - Pakistan Center for Advanced Studies in Water
Mehran University of Engineering & Technology, Jamshoro

Prospectus

MS & PhD

SESSION FALL - 2024

Contents:

Contents:

1

Welcome to Jamshoro:

The Education City

Jamshoro is located on the right bank of the Indus River at Longitude 68°15'35.79" E and Latitude 25°24'54.64" N at an average altitude of 58 m above mean sea level (MSL) along Super Highway, approximately 15 kms Northwest of Hyderabad and 150 kms Northeast of Pakistan's largest city, Karachi. The total geographical area of Jamshoro district is 11,517 square kms. In summer, it is hotter and normally cool in winter.

Interestingly, Jamshoro is virtually the gate-way to the Indus Valley, now world famous for its civilization and rich cultural heritage. The Ranikot Fort is located 40 km to the north of the campus, in the northward continuation of the same hilly track which become Laki Ranges, merging with the Khirthars northwards. Sehwan, a well-known township and famous for tomb of Qalander Lal Shahbaz lies around 130 km to the north of Jamshoro. Manchar Lake the largest fresh water lake in the region is situated to the west north west of Sehwan. Travelling about 280 km north from Sehwan through the Indus plains brings one to the site of Moen-jo-Daro, the most important archeological discovery of the Valley.

Besides being a historical and picturesque site, Jamshoro is home to the five leading universities of Pakistan namely; Mehran University of Engineering & Technology (MUET), Liaquat University of Medical & Health Sciences (LUMHS), University of Sindh, Shaheed Allah Buksh Soomro University (SABSU) and University of Art and Culture (UAC).

2

Mehran University
of Engineering & Technology – **MUET**

MUET was established in 1963 as a constituent college of Sindh University. In 1977, it was chartered as Mehran University of Engineering & Technology. The MUET, as a constituent college of Sindh university, started its journey from 02 departments and now she has 31 departments, institutes, directorates, centers and one campus at Khairpur Mir's, offering courses at undergraduate and postgraduate level in the emerging areas in engineering, science & technology. Another Campus to be established in Jacobabad has recently been approved by the Government of Sindh and will start working soon. MUET enjoys enviable standing now and it has become pioneer institute for the aspiring young talent. In 2013, MUET celebrated its 50 year Golden Jubilee Celebrations.

It is delightfully reported that the quality of our graduates is recognized by the employers in public and private sector. Our alumni are contributing in their professions and have earned senior positions in public & private sector nationally and internationally.

MUET has transformed and evolved from undergraduate degree awarding institute to Research University in last 10 years. Itis committed to improve the quality of higher education and research by strengthening teaching and research infrastructure, creating conducive academic environment, building strong-students-teachers relationship, and providing continuous learning opportunities to both faculty and students.To this end, it has implemented several initiatives that led to improvements in the quality of higher education and research all geared towards meeting the market needs and gaps. MUET envisions to become a paragon of excellence by becoming top 100 universities of the world and the top model university in Pakistan.

2.1

Basic Facts about MUET

- According to ranking of HEC, MUET stands as 1st in the province of Sindh and at number 2 among the public and private Engineering Universities of Pakistan.
- It is one of Pakistan's most research-intensive universities, with a high ratio of academic staff to students.
- The University offers under graduate degree programs in 24 disciplines, ME/MS degree programs in 36 disciplines, and Ph.D degree programs in 29 disciplines, including several advanced short-term training programs.
- Total students population is about 6,900 students, out of which15 percent are females, including 5,800 undergraduate students, 1,000 MS/ME students, and 104 Ph.D students.
- Research and teaching faculty consists of about 450 staff, out of which 125 have Ph.D degrees from international and Pakistani universities.
- The university is actively engaged in promoting activities leading to financial sustainability and growth, improvement in teaching and research excellence, up-gradation of academic programs, and short-terminnovativeprofessional training programs.
- Its development and growth is deep rooted in its philosophy to actively engage with local communities, students, alumni, faculty and private sector to be able to effectively respond to the market needs of the Pakistan's water industry.
- It promotes building strategic connections with students, faculty and administrators to enhance the quality of educational experience for students.
- It is ISO certified since 2003.

2.2

Facilities and Resources at MUET

MUET provides a range of facilities to its students, faculty and staff to create an atmosphere of shared vision for enhancing the lives and livelihoods of students. An overview of facilities and resources available to MUET students is provided below.

Student-Teacher Center:

The University has recently constructed a Students-Teachers Center over an area of 20,000 sq. ft. Several facilities are provided under one roof including but not limited to: information service, student registration desk, bank, post office, and a cafeteria,.

Library:

MUET's library and online information center contains more than 132,000 books related to Engineering, Science and Technology, and other related fields. Other key features of the library include:

- Access to 29 E-databases for e-journals and e-books both within the university campus and outside the campus under the Digital Library Program.
- More than 21,000 text books are available in the Book Bank. These are loaned to students for one term on a nominal rent.
- Other services include: inter-library loan, photocopying of material, internet, and multi-media center, among others.
- Besides the main library and online information center, students can also access subject-specific books and literature from a dedicated library of USPCAS-W.
- A separate portion dedicated for checking out books for PCASW students only has been made available.

4

Transport:

The University has a fleet of its own buses that makes commute within campus as well as between the campus and main towns (Hyderabad, Qasimabad, Latifabad, and Kotri) fairly easy. This service will be provided to students of USPCAS- W as well.

Information and Communication Processing Centre:

The MUET is equipped with the latest devices and servers.

- It works round the clock to provide data and voice services to various parts of the universities including on-campus students' residences.
- To encourage research and development related activities between universities, the Center has connected MUET with fifty two (52) other universities through PERN (Pakistan Educational Research Network).
- It provides uninterrupted services to students through VPN accounts, which is provided on request, to enable them to work from their residences.

Medical:

The campus has a part-time dispensary that is supported by a qualified doctor and a dispenser which deals with only minor ailments. Medical emergencies are referred to the nearby LUMHS Hospital. An ambulance facility is also available.

Sports:

MUET's sports culture is quite diverse and rich. Interested students take part in a range of sports such as; basketball, shooting ball, squash, table tennis, badminton, athletics, cricket, football, hockey, handball and Tennis, among others. In addition to organizing inter-departmental and inter-hostel competitions, MUET sports teams regularly participate in Inter-University sports events. Indoor games and a gym facility separate for female and male students is available in a gymnasium constructed on an area of 25,845 sq.ft.

Accommodation:

Male and female students live in separate hostels. On-campus availability of accommodation for the postgraduate students however is limited. Therefore, several students live off-campus. Private accommodation in Jamshoro and Hyderabad is available at reasonable rates, and most of these areas are connected to campus through regular bus service. Accommodation for USPCAS-W female students is however guaranteed for this batch.

3

U.S. - Pakistan Center for Advanced Studies in Water – USPCAS-W

The USPCAS-W is part of a broader higher education initiative launched in Pakistan with financial support from the United States Government through its Agency for International Development (USAID). The objective of this initiative is to enhance the capacity of Pakistan's higher education institutions to contribute solutions to Pakistan's development challenges.

The initiative entails the establishment of three Centers for Advanced Studies in water, energy and agriculture & food security in four selected Pakistani universities. USPCAS-W is one of the three Centers focused on identifying and developing solutions for the multifaceted water-related challenges facing the country. The Center is housed at the MUET at Jamshoro. (https://water.muet.edu.pk/)

The Center intends to contribute solutions to Pakistan's water-related challenges by educating and training the next generation of water sustainability leaders through advanced academic training in different water-related disciplines. The tangible deliverables of the Center include postgraduate degree programs, applied policy research, facilitation of public-private partnerships, and provision of policy advice in a range of water-related disciplines.

The Center promotes partnerships with the academic institutions, government and the business community to seek applied research solutions that strengthen the effectiveness of policy-making and drive Innovation, Competitiveness and Economic Growth.

3.1

USPCAS-W Activities: An Overview

To meet the changing public and private sector needs for applied research and skilled graduates in a range of water-related disciplines, the Center is engaged in implementing wide range of activities and programs, including the following:

Reforming academic curriculum for higher water education to bring it to international standards;

Improving teaching methods, and strengthening technical capacities of the Center's faculty;

Delivering most relevant and highest quality applied research to meet water sector's present and future needs, including informed policy-making;

Developing and implementing multi-disciplinary graduate and post graduate training programs including arranging weekly graduate seminars by inviting experts from the field & industry;

Field trips for the students to enhance students' technical and operational knowledge about multi- disciplinary aspects of water resource and environmental management;
Strengthening engagement of stakeholders to support research-policy interface;

Building strong links with industry, civil society and government for securing Center's long-term sustainability; and

Providing increasing number of training and research opportunities to talented women as well as to students from economically or culturally disadvantaged backgrounds.

3.2

Why Study at USPCAS-W?

Main thrust of our higher education program in water is to contribute solutions towards achieving water security in Pakistan. Accordingly, we aim at training and inspiring the next generation of water sector professionals to meet specialized demands of government, municipalities, and industry.

- We train students who not only excel in applied engineering, but aim to connect advances in engineering to society's most challenging problems.
- Our programs and courses respond to the present and projected needs of Pakistan's water industry. So one can expect high demand for the graduates of these programs across the board.
- Promising students, especially female students and those belonging to economically disadvantage groups, will benefit from scholarship opportunities available at the Center.
- The students will be able to advance their professional growth and skills under the guidance of well reputed faculty
- We promote and facilitate students' interaction with the visiting faculty and outside experts to enhance their understanding about emerging water issues and their possible solutions.
- We create networking opportunities for the students, thus enabling themto interact with a range of stakeholders to explore internship and employment opportunities.
- Our applied research program is multi-disciplinary in nature and developed within the broader context of the water-development nexus to support science-engineering-policy interface in Pakistan's water sector.
- The Center has constructed a new state of the art building with modern teaching and research infrastructure and learning facilities, all of which will contribute towards the professional growth and development of students.

3.3

Gender Equity

One of USPCAS-W's major goals and crosscutting strategic objectives is to achieve gender equity in the program. The gender policy has also been approved by Mehran University and is being implemented in letter and spirit (https://www.muet.edu.pk/circulars-notifications/gender-policy-statement).

Gender equity is a key strategic direction for USPCAS-W due to which it aims at achieving the following three targets:

- Encouraging females in recruitment, increaseshare of women in faculty and non-faculty positions.
- Encouraging females in new admissions to USPCAS-W prorams.
- Establishing institutions and policies that make gender equity a well understood and effectively implemented management priority with in Center.

4

MUET – University of Utah Partnership

The University of Utah (UU), USA (water.utah.edu), provided technical assistance to MUET in establishing the Water Center under the USAID funding between 2015-2019. Main thrust of technical assistance was on the following areas: curriculum development, applied research, training, exchange visits, governance, and cross-cutting issues like gender empowerment, outreach and networking, fundraising, technology commercialization, and institutional sustainability.

While the USAID funding ceased in early 2020, both universities have agreed to furthering the on-goingcollaboration for next five years (2020-2024). This was formalized through a Memorandum of Understanding (MoU) signed between the two universities on October 22, 2019. The MOU covers the following areas for advancing the collaboration.

- Joint research in the areas of mutual interest.
- Sharing of knowledge through workshops and seminars.
- Seminars for MUET students on higher education opportunities in the United States.
- UU support for research and teaching infrastructure development at MUET.
- UU support for collaboration in higher education related to water management policies, research, curricula development, training, technologies development etc.

As the state's flagship university, the UU offers more than 100 undergraduate majors and more than 92 graduate degree programs. With a long running tradition of academic and research excellence, the UU has long been involved in a range projects reaching across the globe.

Key organizational strengths of UU include: capacity building and international development, institutional development, change management, technology and venture commercialization, curriculum development and reform, research productivity, research infrastructure building, data modeling and analysis, effective teaching and training, distance education, global engagement and sustainability.

5

Academic Programs

5.1 Master of Science (MS)

The USPCAS-W offers 2 years MS degree in the following four specialized fields:

- Hydraulics, Irrigation and Drainage (HID)
- Integrated Water Resources Management (IWRM)
- Environmental Engineering (ENV.ENG)
- Water, Sanitation and Health Sciences (WaSH)

Additionally, graduate seminars on water security in Pakistan is mandatory non-credit hour course to be attended by all students in each semester.

5.1.1

Hydraulics, Irrigation and Drainage – HID

The HID program educates students in the field of open channel and groundwater hydraulics in combination with engineering principles and to support useful plant life, with minimum degradation of soil and water resources. The primary objective is to understand soil, water and plant relationships and how they can be applied to better manage surface and groundwater resources in the production of food and fiber. HID program, especially at the post-graduate level, is structured to be interdisciplinary. In addition to increasing their understating of engineering fundamentals, students are encouraged to explore and appreciate environmental and ecological effects of irrigated agriculture. This is important since irrigated agriculture has come under increasing criticism for being a heavy user of water combined with low land and water productivity and environmental damages to soil and water resources.

Semester-wise Courses/Research (HID Program)

First Semester (HID Program)			
S. #	Course title	Course code	Credit hrs.
01	Agricultural Land Drainage	HID-511	3 (3+0)
02	Open Channel Hydraulics	HID-512	3 (3+0)
03	Professional Development and Practice	HID-515	3 (3+0)
04	GIS and Remote Sensing Applications	HID-522	3 (2+1)
05	Graduate Seminar: Water Security in Pakistan		0
		Total credit hrs	12

Second Semester (HID Program)			
S. #	Course title	Course code	Credit hrs.
01	Irrigation Water Management	HID-521	3 (3+0)
02	Groundwater Hydraulics	HID-523	3 (3+0)
03	Water Law, Policy and Community	HID-525	3 (3+0)
04	Hydro-informatics: Data Management and Analysis	HID-526	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
06	Preparation of Thesis Research Proposal		
		Total credit hrs	12

Note: Either during the 2nd Semester or latest during the Summer following the 2nd Semester, each student is required to defend his/her thesis research proposal through Initial Seminar.

Third Semester (HID Program) only one subject to be selected			
S. #	Course title	Course code	Credit hrs.
01	Watershed Modeling	HID-616	3 (3+0)
02	Graduate Seminar: Water Security in Pakistan		0
03	Thesis Research, Data Collection & Processing etc.		
		Total credit hrs	3

Fourth Semester (HID Program)			
S. #	Course title	Course code	Credit hrs.
01	**Research/ Data Collection & Processing, Thesis Write-up and Final Seminar**		**6**
		Total credit hrs (HID Program)	**33**

Recommended Elective Courses for HID Program

- Soil and Water Conservation
- Climate Change Impact on Water Resources
- Conjunctive Surface/Groundwater Management
- Sediment Transport and Management
- Hydraulic Structure Design

Eligibility Criteria for MS Degree in HID Program

Minimum of 2.5 CGPA (out of 4.0 in the semester system) or First Division (in the annual System) in Bachelor's degree (4 years university education) in relevant field from a HEC recognized university or degree awarding institute .
50% Cumulative Score In Internationally/Naionally recognized tests or 50% Marks in GRE (General) type test Conducted by the University.

- BE/BSc in: Civil Engineering, Agricultural Engineering and Environmental Engineering, Water Resources Engineering, and other related fields.

5.1.2

Integrated Water Resources Management – IWRM

The IWRM program enhances students' knowledge and capacities to deal with multi-disciplinary aspects of water resource allocation and use under conditions of uncertainties. Key topics constituting the program include; principles of IWRM, hazard planning and management, inter-sectoral allocation and use, water governance, institutions and policies, water dispute management, water valuation, economics of water management, and GIS and remote sensing in water resources. Given the emerging complexities in water sector, the need of coordinated decision making across sectors and scales has always been felt. IWRM provides a platform where young leaders are trained in interdisciplinary concepts and methods for integrated water resources management to meet the complex sustainability challenges.

Semester-wise Courses/Research (IWRM Program)

First Semester (IWRM Program)			
S. #	Course title	Course code	Credit hrs.
01	Integrated Water Resources Management: Principles & Applications	IWRM-512	3 (3+0)
02	Professional Development and Practice	IWRM-515	3 (3+0)
03	Sustainable Development and WEF Nexus	IWRM-521	3 (3+0)
04	GIS and Remote Sensing Applications	IWRM-522	3 (2+1)
05	Graduate Seminar: Water Security in Pakistan		0
		Total credit hrs	12

Second Semester (IWRM Program)			
S. #	Course title	Course code	Credit hrs.
01	Hazard Planning and Risk Management	IWRM-511	3 (3+0)
02	Hydro-informatics: Data Management and Analysis	IWRM-513	3 (3+0)
03	Climate and Water	IWRM-523	3 (3+0)
04	Water Law, Policy and Community	IWRM-525	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
06	Preparation of Thesis Research Proposal		
		Total credit hrs	12

Note: Either during the 2nd Semester or latest during the Summer following the 2nd Semester, each student is required to defend his/her thesis research proposal through Initial Seminar.

Third Semester (IWRM Program) only one subject to be selected			
S. #	Course title	Course code	Credit hrs.
01	Model Applications in IWRM	IWRM-614	3 (3+0)
02	Graduate Seminar: Water Security in Pakistan		0
03	Thesis Research, Data Collection & Processing etc.		
		Total credit hrs	3

Fourth Semester (IWRM Program)			
S. #	Course title	Course code	Credit hrs.
01	**Research/ Data Collection & Processing, Thesis Write-up and Final Seminar**		**6**
Total credit hrs (IWRM Program)			**33**

Recommended Elective Courses for IWRM Program

- Water Dispute Management
- Systems Analysis and Optimization
- Climate Change Impacts on Water Resources
- Model Applications in IWRM
- Water Conservation and Rainwater Harvesting

Eligibility Criteria for MS Degree in IWRM

Minimum of 2.5 CGPA (out of 4.0 in the semester system) or First Division (in the annual System) in Bachelor's degree (4 years university education) in relevant field from a HEC recognized university or degree awarding institute .
50% Cumulative Score In Internationally/Naionally recognized tests or 50% Marks in GRE (General) type test Conducted by the University.

- BE/BSc in: Civil Engineering, Agricultural Engineering and Environmental Engineering, Water Resources Management, Water Management, Water/Environmental/ Agricultural Economics, Water Resources Engineering and other related fields.

5.1.3

Environmental Engineering – EnvEng

The EnvEng program emphasizes learning in conventional environmental engineering, physical chemical and biological processes, water and wastewater treatment design, air and noise pollution and control, hazardous and solid waste management, and environmental impact assessment

Semester-wise Courses/Research (EnvEng Program)

First Semester (EnvEng Program)			
S. #	Course title	Course code	Credit hrs.
01	Physical, Chemical, and Biological Processes	ENE-511	3 (3+0)
02	Solid and Hazardous Waste Management	ENE-512	3 (3+0)
03	Air and Noise Pollution Engineering	ENE-513	3 (3+0)
04	Professional Development and Practice	ENE-515	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
Total credit hrs			12

Second Semester (EnvEng Program)			
S. #	Course title	Course code	Credit hrs.
01	Water and Wastewater Treatment Design	ENE-522	3 (3+0)
02	Environmental Impact Assessment	ENE-523	3 (3+0)
03	Water Law, Policy and Community	ENE-525	3 (3+0)
04	Environmental Economics	ENE-526	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
06	Preparation of Thesis Research Proposal		
		Total credit hrs	12

Note: Either during the 2nd Semester or latest during the Summer following the 2nd Semester, each student is required to defend his/her thesis research proposal through Initial Seminar.

Third Semester (EnvEng Program) only one subject to be selected			
S. #	Course title	Course code	Credit hrs.
01	Occupational Health & Safety	ENE-611	3 (3+0)
02	Graduate Seminar: Water Security in Pakistan		0
03	Thesis Research, Data Collection & Processing etc.		
		Total credit hrs	3

Fourth Semester (EnvEng Program)			
S. #	Course title	Course code	Credit hrs.
01	**Research/ Data Collection & Processing, Thesis Write-up and Final Seminar**		**6**
		Total credit hrs	**33**

Recommended Elective Courses for EnvEng Program

- Environmental Biotechnology for environmental sustainability
- Field Monitoring and Laboratory Analysis
- Industrial Pollution Control
- Water Quality Modeling
- Advanced Environmental Chemistry

Eligibility Criteria for MS Degree in EnvEng

Minimum of 2.5 CGPA (out of 4.0 in the semester system) or First Division (in the annual System) in Bachelor's degree (4 years university education) in relevant field from a HEC recognized university or degree awarding institute .
50% Cumulative Score In Internationally/Naionally recognized tests or 50% Marks in GRE (General) type test Conducted by the University.

- BE/BSc in: Environmental Engineering, Civil Engineering, Agricultural Engineering or anty other engineering discipline with at least one subject of Environmental Engineering.

5.1.4

Water, Sanitation & Health Sciences – WaSH

In contrast to most 'traditional' degrees in environmental engineering, individuals in this program will need to have the knowledge, skills and attitudes to assess the needs of a community, design, evaluate and implement technical solutions to the deficiencies of water supply and sanitation that are appropriate for a given community and sustainable, through a process of community engagement and mobilization, and in partnership with like-minded organizations whose focus is on health promotion and education.

Individuals trained in this program will have the skills and knowledge to work effectively with community and community-based organizations and the local political structure to effectively implement water and sanitation interventions, assess the functioning and impacts of these systems, and identify and implement solutions to improve the effectiveness and sustainability of existing systems.

Scheduling of Courses/Research
(Water, Sanitation & Health Sciences Program)

Scheduling of Courses/Research (WaSH Program)

First Semester (WaSH Program)			
S. #	Course title	Course code	Credit hrs.
01	Water and Health	WaSH-511	3 (3+0)
02	Small Water System Design	WaSH-512	3 (3+0)
03	Chemistry & Biology of WaSH	WaSH-513	3 (3+0)
04	Professional Development and Practice	WaSH-515	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
		Total credit hrs	12

Second Semester (WaSH Program)			
S. #	Course title	Course code	Credit hrs.
01	WaSH and Community	WaSH-521	3 (3+0)
02	Biostatistics and Epidemiology	WaSH-522	3 (3+0)
03	Sanitation Systems, Waste Reuse and Hygiene	WaSH-523	3 (3+0)
04	Water Law, Policy and Community	WaSH-525	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
06	Preparation of Thesis Research Proposal		
		Total credit hrs	12

Note: Either during the 2nd Semester or latest during the Summer following the 2nd Semester, each student is required to defend his/her thesis research proposal through Initial Seminar.

Third Semester (WaSH Program) only one subject to be selected			
S. #	Course title	Course code	Credit hrs.
01	WaSH Assessment and Practical Management	WaSH-611	3 (3+0)
02	Graduate Seminar: Water Security in Pakistan		0
03	Thesis Research, Data Collection & Processing etc.		
		Total credit hrs	3

Fourth Semester (WaSH Program)			
S. #	Course title	Course code	Credit hrs.
01	**Research/ Data Collection & Processing, Thesis Write-up and Final Seminar**		**6**
	Total credit hrs (WaSH Program)		**33**

Eligibility Criteria for MS Degree in Water, Sanitation & Health Sciences

Minimum of 2.5 CGPA (out of 4.0 in the semester system) or First Division (in the annual System) in Bachelor's degree (4 years university education) in relevant field from a HEC recognized university or degree awarding institute .
50% Cumulative Score In Internationally/Naionally recognized tests or 50% Marks in GRE (General) type test Conducted by the University.

- Applicants mst have a bachelor degree of engineering in civil, environment, agriculture and water resources, degree in environmental science, physical sciences (Chemistry, Bio chemistry), medicine and biological sciences (biology, microbiology, bio sciences etc).

5.2

Master of Science (MS) Degree Requirement

For completion of MS Degree in above referred programs, following requirements are to be completed:

- 27 credit hours of graded coursework.
- Semester requirements include: assignments, test/quizzes, mid-term examination, and final examination
- 6 credit hours of graded thesis research
- A pass/fail graduate seminar

5.3

Doctor of Philosophy (Ph.D.) Degree Program (Duration: 3 years)

The USPCAS-W offers Ph.D. degrees in the following three specialized fields:

I Hydraulics, Irrigation and Drainage (HID)

ii. Integrated Water Resources Management (IWRM)

iii. Environmental Engineering (ENV.ENG)

The Ph.D. program is designed to provide students with detailed knowledge and critical understanding of subject specific issues within the context of water-development nexus, including the science behind the subject and the skills to translate science into practice.

The Ph.D. program is a combination of course work and research. The students are required to complete 18 credit hours of graded course work, and write a dissertation based on original/applied research. The course work requirements include the following:

- A course on Research Methodology (3 credit hours)
- A course on Modeling and Simulation (3 credit hours)
- Four courses relevant to the area of specialization (12 credit hours)
- Other requirements to be fulfilled for completing the degree include qualifying the comprehensive examination including writing of dissertation and its defense in prescribed period.

Eligibility Criteria for Ph.D. Degree Program

HID	IWRM	Env.Eng.
ME/MS in HID or any other related discipline	ME/MS in IWRM or any other related discipline	ME/MS in Environmental Engineering or in any other related discipline

General Rules for Admission

- The center will accept only on-line applications for admission. An application form as well as other documentation to be provided in support of application, is available at **admissions.water.muet.edu.pk**

Minimum of 3.0 CGPA (out of 4.0 in the semester system) or First Division (in the annual System) in Master's degree (6 years university education) in relevant field from a HEC recognized university or degree awarding institute.

60% Cumulative Score In Internationally/Naionally recognized tests or 70% Marks in GRE (General) type test Conducted by the University.

6

Regulations for Master Degree Programs

Short Title

These regulations may be called the Mehran University of Engineering and Technology Master Degree Course Regulations 2017 repealing such regulations framed by the University authorities (if any).

These regulations shall be deemed to have come into force with effect from 2018 batch and onwards.

Eligibility:

To be eligible for admission to the Master Degree Program, a student must possess first class (minimum 60% maksor minimum CGPA +2.5 out of 4.00) Bachelor's degree (5 years university education) in the relevant field of study. Moreover, the student must pass pre-admission test conducted by the University of his/her minimum Score in internationally/nationally recognized test is 50.

Procedure for Admission

The applicant shall submit the application from duly completed in all respects along with the 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 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.

Transfer of Credits

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

Duration of Studies and Research

The Minimum period for completing all the requirements of a Master Program shall be two years (four semester). The maximum period shall be four years.
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 up to 12.A Master Degree Program Shall have 33 C.H of course working 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 stating 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 contract hours for a theory subject of 3 C.H per semester shall be 45 and minimum number of contact hours for a theory subject of 2 C.H shall be 30 and practical of 1 C.H per semester shall be 45.

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

- Assignments
- Texts/Quizzes (minimum two)
- Mid Semester Examination
- 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.

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

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

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

1. Credit Hour (C.H)

One Credit Hour for a particular course is generally to be considered as one hour of teaching theory per week and for practical/lab work I C.H. be considered as 3 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 "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 determned by the followng way:

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

The distribution of marks for each theory and practical course in a semester shall be as follows:

Theory	Max Marks 100	Max Marks 50
Test (s) Assignment (s) Quizes	25	12
Mid Semester Examination	25	13
Final Semester Examination	50	25
Total	100 marks	50 Marks

Practical/Lab Work	Max Marks 100	Max Marks 50
Lab Evaluation	50	25
Semester Lab Examination	50	25
Total	100 marks	50 Marks

Note: for the course carrying other than 100 and 50 marks the distribution of marks shall be done accordingly.

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

01	Mid Semester Examination	After 8 weeks
02	Final Semester Examination	After 16 weeks

Fees Structure and Financial Assistance

FEE BREAKUP FOR THE STUDENTS OF POSTGRAUDATE STUDIES FOR SPRING 2023 FOR THE ORDINARY STUDENTS

S. No.	Description	ME/MS/MBA/M.Phil				PhD			
		1st Semester	2nd Semester	3rd Semester	4th Semester	1st Semester	2nd Semester	3rd Semester	4th Semester
1	Registration Fee (Once)	Rs. 4,000	Rs. 0	Rs. 0	Rs. 0	Rs. 8,000	Rs. 0	Rs. 0	Rs. 0
2	Enrolment Card Fee (Once)	Rs. 1,210	Rs. 0	Rs. 0	Rs. 0	Rs. 1,210	Rs. 0	Rs. 0	Rs. 0
3	Research Proposal Processing Fee (Once)	Rs. 1,000	Rs. 0	Rs. 0	Rs. 0	Rs. 2,000	Rs. 0	Rs. 0	Rs. 0
4	Library Deposit - Refundable (Once)	Rs. 2,000	Rs. 0	Rs. 0	Rs. 0	Rs. 2,000	Rs. 0	Rs. 0	Rs. 0
5	Caution Money - Refundable (Once)	Rs. 2,000	Rs. 0	Rs. 0	Rs. 0	Rs. 2,000	Rs. 0	Rs. 0	Rs. 0
6	Tuition Fee (Per Semester)	Rs. 36,000	Rs. 36,000	Rs. 36,000	Rs. 36,000	Rs. 36,000	Rs. 36,000	Rs. 36,000	Rs. 36,000
7	Field Visits & Other Actitivties (Per Semester)	Rs. 1,000	Rs. 1,000	Rs. 1,000	Rs. 1,000	Rs. 1,000	Rs. 1,000	Rs. 1,000	Rs. 1,000
8	Research Journal Fee (Per Semester)	Rs. 300	Rs. 300	Rs. 300	Rs. 300	Rs. 500	Rs. 500	Rs. 500	Rs. 500
9	Examination Fee (Per Semester)	Rs. 1,515	Rs. 1,515	Rs. 1,515	Rs. 1,515	Rs. 1,515	Rs. 1,515	Rs. 1,515	Rs. 1,515
10	Marks Certificate Fee (Per Semester)	Rs. 400	Rs. 400	Rs. 400	Rs. 400	Rs. 400	Rs. 400	Rs. 400	Rs. 400
11	Transport Charges (Per Semester)	Rs. 8,000	Rs. 8,000	Rs. 8,000	Rs. 8,000	Rs. 8,000	Rs. 8,000	Rs. 8,000	Rs. 8,000
12	Thesis Evaluation Fee (Once)	Rs. 0	Rs. 0	Rs. 0	Rs. 4,000	Rs. 8,000	Rs. 0	Rs. 0	Rs. 8,000
13	Transcript Fee (Once)	Rs. 0	Rs. 0	Rs. 0	Rs. 1,800	Rs. 0	Rs. 0	Rs. 0	Rs. 1,800
14	Degree Fee (Once)	Rs. 0	Rs. 0	Rs. 0	Rs. 6,000	Rs. 0	Rs. 0	Rs. 0	Rs. 6,000
15	Re-Entry Fee (As per Need)*	Rs. 0	Rs. 0	Rs. 0	Rs. 0	Rs. 0	Rs. 0	Rs. 0	Rs. 0
	Total Admission and Semesters Fee	Rs. 57,425	Rs. 47,215	Rs. 47,215	Rs. 59,015	Rs. 62,625	Rs. 57,830	Rs. 47,415	Rs. 89,430

Note: Admission Form and Processing Fee of Rs. 3,550-00 (including pre-admission test arrangement charges, etc) is charged separately at the time of online registration

* The Re-Entry Fee amounting to Rs. 3,000-00 uis charged as and when a studient is re-admitted.

7

Academic Calendar (2024-26)

Description	Date/Timeline
Last date to apply	21 - 07 - 2024
Entry Test	07 - 08 - 2024
Merit List	15 - 08 - 2024
Date of Registration	19 - 08 - 2023 to 23 - 08 - 2024
Orientation Day	09 - 09 - 2024
1st Semester	
Classes start	09 - 09 - 2024
Classes end	27 - 12 - 2024
Examinations start	06 - 01 - 2025
Semester Break	20 - 01 - 2025 to 31 - 01 - 2025
2nd Semester	
Classes start	03 - 02 - 2025
Classes end	23 - 05 - 2025
Examinations start	02 - 06 - 2025
Internship for Students	16 - 06 - 2025 to 01 - 08 - 2025
3rd semester	
Classes start	08 - 09 - 2025
Classes end	19 - 12 - 2025
Examinations start	29 - 12 - 2025
4th Semester (Feb-June 2026)	
MS students have to complete their research, including writing and defense of thesis. Ph.D. students will continue with their research work.	

8

The Center's Staff

The operations of US-PCASW are broadly organized under two categories: (i) center's administration and management and (ii) teaching and research. Administration and management responsibilities are looked after by the Project Management Unit, while research and teaching functions are performed by a highly qualified faculty.

8.1

Administrative Management Unit

The administrative management unit of USPCAS-W responsible for handling all administrative and academic matters and comprises of the following key personnel.

- Dr. Kamran Ansari, Director
- Dr. Bakhshal Khan Lashari, Emeritus Professor
- Mr. Muhammad Ali, Academic Coordinator
- Mr. Aftab Ahmed Khoso, Finance Officer
- Mr. Rajoo Menghwar, Superintendent
- Mr. Shahzad Choudhary, Web Developer
- Mr. Naeem Dal, Assistant System Administrator
- Mr. Faizan Memon, Logisitic Officer

8.2
Faculty Profile

Dr. Kamran Ansari

Dr. Kamran Ansari (pd.uspcasw@admin.muet.edu.pk)

PhD in Open Hydraulics, University of Nottingham, UK

Expertise: Open channel hydraulics, hydrology, water resources engineering, irrigation and drainage.

Dr. Bakhshal Lashari

Dr. Bakhshal Lashari

PhD in Sediment Transport from Agriculture University Krakow, Poland, Post-doctoral Fellow under Fulbright Program in Integrated Water Resources Management at Colorado State University USA, and also under Endeavour Australia Program in Groundwater Governance from the University of South Australia, Australia.

Expertise: hydrology, irrigation, drainage, water resources management, water conservation

Dr. Abdul Latif Qureshi

Dr. Abdul Latif Qureshi (alqureshi.uspcasw@faculty.muet.edu.pk)

PhD in Hydraulics and Irrigation Engineering from Mehran University of Engineering and Technology, Pakistan

Expertise: water resources planning, optimization of water resources, surface water hydrology

Dr. Zubair Ahmed

Dr. Zubair Ahmed (zahmed.uspcasw@admin.muet.edu.pk)

PhD in Environmental Engineering from University of Science and Technology, South Korea, Post-doctoral Fellow at Sejong University, Seoul, South Korea.

Expertise: Biological wastewater treatment, application of member bioreactors for nutrient removal, anaerobic digestion, physio-chemical treatment of water & wastewater.

Dr. Arjumand Zaidi

Dr. Arjumand Zaidi (arjumand.uspcasw@faculty.muet.edu.pk) is PhD in Information Technology from School of Information Technology, George Mason University, Fairfax, Virginia. USA.

Expertise: Dr. Zaidi is experienced in the field of environmental evaluation and decision making. Her research interests include optimization and modeling of water resources, environmental and disaster management systems. Most of her research work deals in environmental decision making with the help of various numerical techniques and Geographical Information Systems (GIS) using satellite data.

Dr. Syeda Sara Hassan

Dr. Syeda Sara Hassan (sshassan.uspcasw@faculty.muet.edu.pk)

PhD in Analytical Chemistry, University of Sindh, Jamshoro, including research at Monash University, Australia

Expertise: chemistry, water quality, Water, Sanitation and Health (WASH)

Dr. Naveed Ahmed

Dr. Naveed Ahmed Qambrani (naveed.uspcasw@faculty.muet.edu.pk)

Ph.D. (Biological Environment), KNU, South Korea, Post Doc. (Nutrient Recovery)

Expertise: His research interests include biosensor development, toxicity assessment, sulfur-oxidizing bacteria, struvite recovery from swine wastewater, anaerobic digestion, and sulfur-utilized denitrification of groundwater

Dr. Tanveer Ahmed Gadhi

Dr. Tanveer Ahmed Gadhi (tanveer.uspcasw@faculty.muet.edu.pk)

Ph.D. (Chemical Engg.) Politecnicao di Torino, Italy

Expertise: My work focuses specifically on the design and development of nano materials for environmental applications.

Dr. Muhammad Rizwan

Dr. Muhammad Rizwan (drmizwan.uspcasw@faculty.muet.edu.pk)

Ph.D. (Chemical Engg.) Politecnicao di Torino, Italy

Expertise: My work focuses specifically on the design and development of nano materials for environmental applications.

Dr. Asmatullah

Dr. Asmatullah (asmatullah@faculty.muet.edu.pk)

PhD in Natural Resource Management, Asian Institute of Technology, Thailand
Expertise: Water footprints & carbon footprints analysis, sustainability & eco-efficiency analysis, agricultural water productivity assessment and integrated water resources management.

Dr. Ghulam Hussain Dars

Dr. Ghulam Hussain Dars (ghdaras.uspcasw@faculty.muet.edu.pk)

PhD. in IWRM, M.S. in Civil and Environmental Engineering, Portland State University, Oregon, USA

Expertise: Hydrology, climate change impact analysis, flood modeling, water resources engineering, water quality, GIS, project planning, IWRM

Dr. Uzma Imran

Dr. Uzma Imran (uimran.uspcasw@faculty.muet.edu.pk)

Ph.D. in Environmental Engineering and Masters in Environmental Management

Expertise: Environmental Impact Assessment, environmental laws & management plans and strakeholder consultation.

Dr. Muhammad Ali

Dr. Muhammad Ali (mali.uspcasw@faculty.muet.edu.pk)

Ph.D. in Economics, University of Sindh
Masters Int'l Public Policy, University of Tsukuba, Japan (JJ/WBGSP Fellow)
He teaches sustainable Development and WEF Nexus, Sociology and Water policies. His research interests are development economics, poverty alleviation, and community development. Apart from research and teaching, he has experience in Monitoring and evaluation, institutional building and netwroking.

Mr. Waqas Ahmed

(On Study Leave)

Mr. Waqas Ahmed (wapathan.uspcasw@faculty.muet.edu.pk)

M.Sc. in Water Resources Engineering Management, University of Sturttgart, Germany

Expertise: GIS and remote sensing, marine ecosystems, hydromechanics, water resource engineering.

Ms. Rakhshinda Bano

(On Study Leave)

Ms. Rakhshinda Bano (rbano.uspcasw@faculty.muet.edu.pk)

M.Sc. in Environmental Science, State University of New York, USA

Expertise: Wetlands conservation, water management and human health, environmental economics, sustainable development.

8.3 Visiting Faculty

Dr. Rasool Bux Mahar

Dr. Rasool Bux Mahar (vc@bbsutsd.edu.pk)

PhD in Environmental Engineering from Tsinghua University, Peoples Republic of China, Post Doctorate from University of Utah, USA.

Expertise: Identification and Characterization of antibiotic resistant bacteria and their disinfection, water and waste treatment design, removal of metals from water throuh non-fibers, constructed wetland solid waste treatment, anaerobic digestion and kinetic modeling.

Dr. M. Munir Babar

Dr. M. Munir Babar (mmunirbabar.uspcasw@faculty.muet.edu.pk)
PhD in Computational Hydraulics from Kyoto University Japan

Expertise: open channel hydaulics, computational hydraulics, design, design of hydraulic structures i.e. dams, barrages, spillway and canal design, analysis of hydraulic computations of dams, energy dissipaters and stilling basin, barrage design for surface and sub-surface flow conditions, and computer modeling of open channels and groundwater flows using FEM techniques.

Dr. Asif Shaikh

Dr. Asif Shaikh (asif.shaikh@neduet.edu.pk.)
PhD in Engineering (System Science), Nagasaki University, Japan

Expertise: Remote Sensing for Urban and Environmental Monitoring, Satellite Remote Sensing and Image Processing,Population Growth and its effects, Sustainable infrastructure Development, Environmental Impact Assessment

Dr. Suhail Bijrani

Dr. Suhail Bijrani

MBBS, Master in Public Health (MPH) from Baqai University, Karachi, M. Phil (Community Medicine) from Isra University, Hyderabad.

Expertise: Epidemiology, Occupational Healt, Public health policy & Infectious disease.

Dr. Zeeshan Khatri

Dr. Zeeshan Khatri (zeeshan.khatri@faculty.muet.edu.pk)
Doctorate from Shinshu University Japan

Expertise: Nanomaterial,nanofibers membranes, Textile Pretreatment, fiber science, Textile Dyes and Dyeing, Textile Finishing, Colour Physics, Textile Spinning, Textile Printing, Environmental Engineering, Nonwoven Engineering, Applied Textile Process and Polymer Engineering, High Performance Fibers Textile Standards and Methods.

Dr. Awais Khatri

Dr. Awais Khatri (awais.khatri@faculty.muet.edu.pk)
PhD in Doctor of Philosophy Apparel and Textiles, RMIT Australia

Expertise: Dyeing Production, Textile Colouration, Textile Functional Finishing and Coating, Environmentally Sustainable Textile Processing, Nonwovens Product Development, and Medical Textiles.

9

Students' Views about USPCAS-W

Attiqa Nizamani
MS in WaSH

"Behaviors of teachers are quite different from other institutes that I have attended. Teachers are very kind and helping. Equality of all is also one of the best things about the center. We can talk to our teachers any time, even with the director of center. At canteens, we all sit together and it boosts up my confidence. It makes us feel that we all are equal here with just different roles. I feel like I, as an individual, also matter"

Faiza Kalhoro
Dadu, Sindh; MS in HID

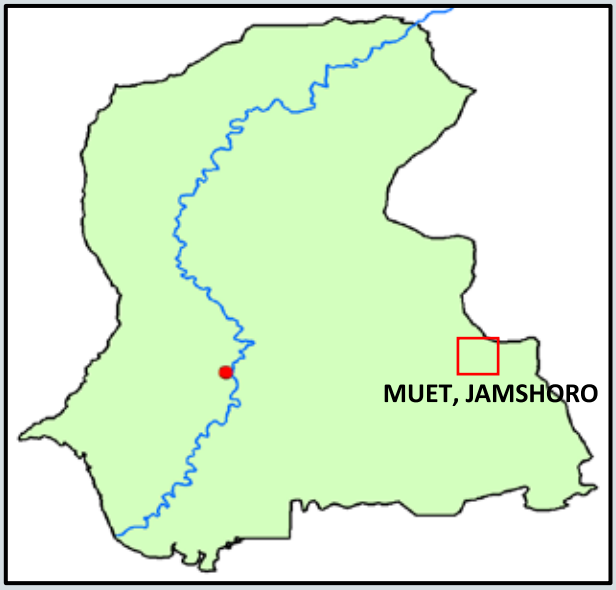
I would say everything including my past and present experiences has combined together to build me into this newer person. Also, the teachers that I found here at the Center have played great role in building my personality. You know what, my parents appreciate this change in me a lot

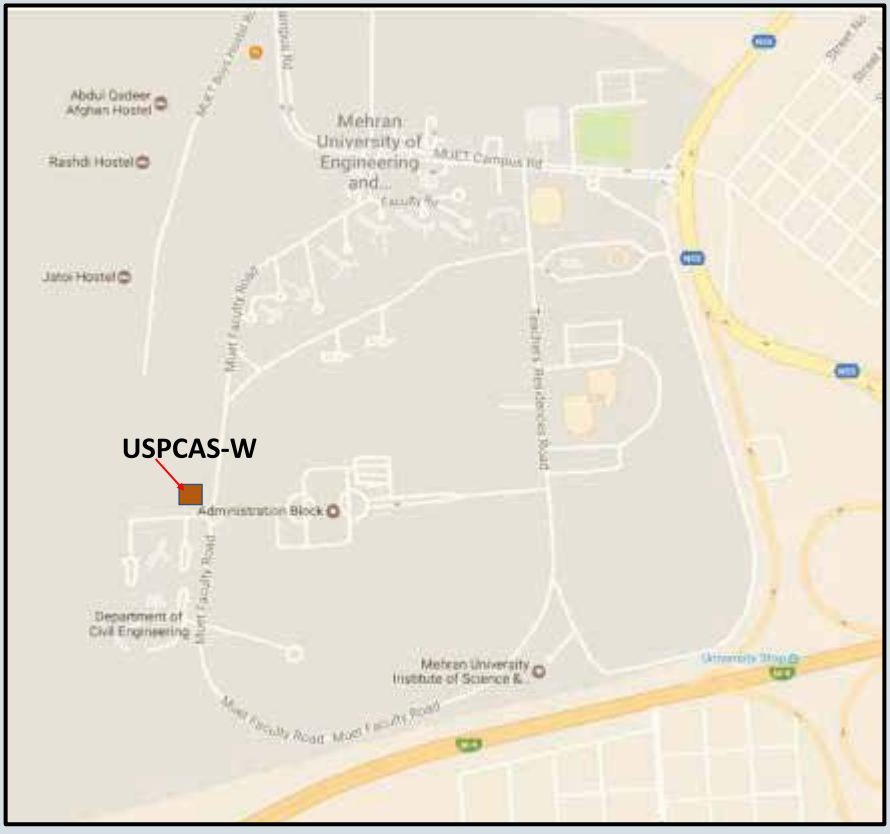
Muhammad Wajid Ijaz
PhD. in Environmental Engineering

An amazing experience. Though the laboratories and the Centre were in infancy but the cooperation and support provided by administration especially by my supervisor Prof. Dr. Rasool Bux Mahar--is nonetheless memorable."

10

Campus Map





Contact:

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

Mehran University of Engineering and Technology, Jamshoro-76062, Sindh - Pakistan

for feedback, questions and media queries: admissions.uspcasw@admin.muet.edu.pk

water.muet.edu.pk | @ uspcasw@admin.muet.edu.pk | /USPCASW | USPCASW_MUET | +92 22 210 9145