



USAID
FROM THE AMERICAN PEOPLE

U.S.-Pakistan

Centers for Advanced Studies in Water

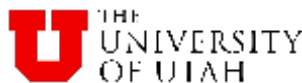


Prospectus

MS & PhD Programs

Spring 2018

Partnering Universities:



MEHRAN UNIVERSITY
of Engineering & Technology
Jamshoro, Pakistan

Contents:

1

Welcome to Jamshoro: The Education City

1

2

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

2

3

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

7

4

MUET – University of Utah Partnership

11

5

Academic Programs

12

Contents:

6

General Rules for Admission

25

7

Academic Calendar (2017-18)

26

8

The Center's Staff

27

9

Students' Views about USPCAS-W

33

10

USPCAS-W, MUET Campus Map

36

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-jodaro, the most important archeological discovery of the Valley. Besides being a historical and picturesque site, Jamshoro is home to the three leading universities of Pakistan namely; Mehran University of Engineering & Technology (MUET), Liaquat University of Medical & Health Sciences (LUMHS) and University of Sindh.



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. It is 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.



Basic Facts about MUET

- According to 2015 ranking of HEC, MUET stands as 1st in the province of Sindh and at number 6 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 graduated eegreprograms in 17 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 which 15 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-term innovative professional 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.



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.



Transport:

The University has a fleet of its own buses that makes commute within the 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 free of charge.

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.



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. (<http://water.mueta.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

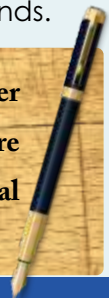
USPCAS-W Activities: An Overview

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.



The Center has established National Water Research Network that brings together experts, practitioners, policy makers, private sector and civil society groups to share knowledge and raise awareness about the water sector challenges and their potential solutions.



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 opportunities for thesis research and short-term training in US universities; especially at the University of Utah (UU).
- The students will be able to advance their professional growth and skills under the guidance of well reputed faculty both at the MUET and UU.
- 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 them to 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.

Scholarship and other facilities

Students enrolled in the Center will be entitled to:

- (a) Full tuition fee for all semesters;**
- (b) A stipend of Rs. 15, 000 per month to cover living and accommodation costs;**
- (c) Free transport through university buses; and**
- (d) Training and research opportunity at University of Utah or any of its partner university in USA for all those who meet the criteria.**

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 (<http://www.muett.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:

- Ensuring 50% share of women in recruitment, increase share of women in faculty and non-faculty positions.
- Ensuring 50% share of women in new admissions to USPCAS-W programs.
- Establishing institutions and policies that make gender equity a well understood and effectively implemented management priority within Center.



MUET – University of Utah Partnership

The University of Utah (UU), USA (water.utah.edu), has been selected by USAID as the technical assistance partner of MUET for advancing the development and growth of US-PCASW.

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.

The MUET-UU partnership covers the following areas of cooperation: curriculum development, applied research, training, exchanges, governance, and cross-cutting issues (gender empowerment, outreach and networking, fundraising, technology commercialization, and institutional sustainability). Under the US-PCASW project, many



of the promising MUET's post graduate students and faculty will have the opportunity to benefit from the most modern teaching and research infrastructure available at the UU. At the UU, more than 100 faculty members are engaged in research on water related issues from different disciplinary perspectives, especially urban water, wastewater treatment, sanitation and health, and law and policy. Many of these faculty members are directly engaged in supporting USPCAS-W activities at MUET, especially with regard to curriculum advancement, strengthening research capacities and infrastructure, and capacity building of MUET faculty.

To support MUET in establishing a world-class center for research and education on water resources management, the UU has set up several committees and thematic working groups. A team of 28 faculty members drawn from UU as well as four partner institutions representing key fields relevant to the study of water resources are contributing to the work of these committees and working groups. The UU has also designed a Peer Teacher Partnering (PTP) program to train the trainers. It connects MUET faculty to UU faculty for seeking support in the design and delivery of courses and research projects.

List of UU faculty involved in supporting MUET can be found at <http://water.utah.edu/uspcasw/about-us/team/>.

5

Academic Programs

5.1

Master of Science (MS)/

Master of Engineering (ME) Degree Program

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

Additionally, weekly graduate seminar series 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	Professional Development and Practice	HID-515	3 (3+0)
02	Hydro-informatics: Data Management and Analysis	HID-513	3 (3+0)
03	Open Channel Hydraulics	HID-512	3 (3+0)
04	Agricultural Land Drainage	HID-511	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
Total credit hrs			12



Second Semester (HID Program)			
S. #	Course title	Course code	Credit hrs.
01	Water Law, Policy and Community	HID-525	3 (3+0)
02	GIS and Remote Sensing Applications	HID-522	3 (2+1)
03	Groundwater Hydraulics	HID-523	3 (3+0)
04	Irrigation Water Management	HID-521	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)			
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

Note: Some students proceed to USA under exchange program and those returning from Exchange Program are required to take the remaining course (HID-616) during the fourth semester.

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

- Applicants must have obtained a Bachelor's degree in the subjects mentioned below with 16 years of education, 1st class or 3.0 and above CGPA.
- 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	Professional Development and Practice	IWRM-515	3 (3+0)
02	Hydro-informatics: Data Management and Analysis	IWRM-513	3 (3+0)
03	Integrated Water Resources Management: Principles & Applications	IWRM-512	3 (3+0)
04	Hazard Planning and Risk Management	IWRM-511	3 (3+0)
05	Graduate Seminar: Water Security in Pakistan		0
Total credit hrs			12



Second Semester (IWRM Program)			
S. #	Course title	Course code	Credit hrs.
01	Water Law, Policy and Community	IWRM-525	3 (3+0)
02	GIS and Remote Sensing Applications	IWRM-522	3 (2+1)
03	Sustainable Development and WEF Nexus	IWRM-521	3 (3+0)
04	Climate and Water	IWRM-523	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)			
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

Note: Some students proceed to USA under exchange program and those returning from Exchange Program are required to take the remaining course (IWRM-614) during the fourth semester.

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

Pre-requisites/Refresher Courses

Refresher courses for students with non-engineering academic background will be offered in Statistics, Basic Mathematics and Basic Hydrology etc.

Eligibility Criteria for MS Degree in IWRM

Applicants must have obtained a Bachelor's degree in the subjects mentioned below with 16 years of education, 1st class and/or 3.0 and above CGPA.

BE/BSc in: Civil Engineering, Environmental Engineering, Agricultural 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	Professional Development and Practice	ENE-515	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	Physical, Chemical, and Biological Processes	ENE-511	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 Law, Policy and Community	ENE-525	3 (3+0)
02	Environmental Economics	ENE-526	3 (3+0)
03	Water and Wastewater Treatment Design	ENE-522	3 (3+0)
04	Environmental Impact Assessment	ENE-523	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)			
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

Note: Some students proceed to USA under exchange program and those returning from Exchange Program are required to take the remaining course (ENE-611) during the fourth semester.

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

- Applicants must have obtained a Bachelor's degree in the subjects mentioned below with 16 years of education, 1st class and/or 3.0 and above CGPA.
- BE/BSc in: Environmental Engineering, Civil Engineering, Agricultural Engineering or any 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	Professional Development and Practice	WaSH-515	3 (3+0)
02	Water and Health	WaSH-511	3 (3+0)
03	Small Water System Design	WaSH-512	3 (3+0)
04	Chemistry & Biology of WaSH	WaSH-513	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	Water Law, Policy and Community	WaSH-525	3 (3+0)
02	WaSH and Community	WaSH-521	3 (3+0)
03	Biostatistics and Epidemiology	WaSH-522	3 (3+0)
04	Sanitation Systems, Waste Reuse and Hygiene	WaSH-523	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)			
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

Note: Some students proceed to USA under exchange program and those returning from Exchange Program are required to take the remaining course (WaSH-611) during the fourth semester.

Pre-requisites/Refresher Courses

All applicants will need to have passed mathematics course through pre-calculus, as well as at least one college level course in chemistry and biology.

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

- Applicants must have obtained a Bachelor's degree in the subjects mentioned below with 16 years of education, 1st class and/or 3.0 and above CGPA.
- Applicants must have a bachelor degree of engineering in civil, environment, agriculture & water resources, degree in environmental science, physical sciences (chemistry, bio chemistry etc), medicine and biological sciences (biology, micro biology, 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

Applicants must have obtained a Masters' degree in the subjects mentioned under each program area in the following table with 18 years of education; and first class or CGPA 3.0 and above out of 4.0.

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

6

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 water.muet.edu.pk/resources/admissions/
- To qualify for admission, applicants must obtain at least 60% marks for MS and 70% marks for PhD in General GRE type test to be conducted by the Center.

Academic Calendar (2018-19)

Description	Date/Timeline
Last date to apply	03.11.2017
Entry Test	26.11.2017
Merit List	03.12.2017
Date of Registration	01-12.01.2018
Orientation Day/Start of Classes	15.01.2018

1st Semester

Classes start	15.01.2018
Classes end	04.05.2018
Examinations start	21.05.2018
Internship for Students	04.06.2018 to 19.08.2018

2nd Semester

Classes start	20.08.2018
Classes end	07.12.2018
Examinations start	26.12.2018
Semester Break	07.01.2019 to 13.01.2019

3rd semester

Classes start	14.01.2019
Classes end	03.05.2019
Examinations start	20.05.2019

This semester may also involve a trip to USA University for research/training purposes.

4th Semester (Aug-Dec 2019)

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

Project Management Unit

The Project Management Unit of USPCAS-W responsible for handling all project related administrative and programmatic matters comprises of the following key personnel.

- Dr. Bakhshal Khan Lashari, Project Director
- Dr. Rasool Bux Mahar, Deputy Director (Academics and Research)
- Director Administration
- Mr. Shahid Panhwar, Monitoring & Evaluation Specialist
- Mr. Mansoor Ali Shah, Financial & Grants Manager

Key personnel from USA partnering university (University of Utah) are also located at MUET.

- Dr. M. Aslam Chaudhry, Chief of Party
- Dr. Jeff Ullman, Technical Advisor

8.2

Faculty Profile

Dr. Bakhshal Lashari

Dr. Bakhshal Lashari (pd.uspcasw@admin.mueta.edu.pk)

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. M. Munir Babar

Dr. M. Munir Babar (mmunirbabar.uspcasw@faculty.mueta.edu.pk)

PhD in Computational Hydraulics from Kyoto University Japan

Expertise: open channel hydraulics, computational hydraulics, design of hydraulic structures i.e. dams, barrages, spillways 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. Abdul Latif Qureshi

Dr. Abdul Latif Qureshi (alqureshi.uspcasw@faculty.mueta.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. Rasool Bux Mahar

Dr. Rasool Bux Mahar (dd.uspcasw@admin.muuet.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 through nano-fibers, constructed wetland, solid waste treatment, anaerobic digestion and kinetic modeling.

Dr. Kamran Ansari

Dr. Kamran Ansari (kansari@faculty.muuet.edu.pk)

PhD in Open Channel Hydraulics, University of Nottingham, UK

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

Dr. Altaf Ali Siyal

Dr. Altaf Ali Siyal (aasiyal.uspcasw@faculty.muuet.edu.pk)

PhD in Soil and Water, Cranfield University at Silsoe, UK; Post-doctorate on 'Subsurface irrigation simulations' at USDA Salinity Lab Riverside, CA under Fulbright Fellowship Program and also post-doctorate under Australian Endeavour Research Fellowship Program in 'Soil Water and Crop Environment' from CSIRO, Townsville.

Expertise: Soil waterlogging and salinity, irrigation water management, groundwater, soil and water conservation, GIS and remote sensing.

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. 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. 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. Syed 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)

Ms. Rakhshinda Bano

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.

Ms. Uzma Imran

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

Masters in Environmental Management

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

Mr. Waqas Ahmed

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

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

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

Mr. Ghulam Hussain Dars

Mr. Ghulam Hussain Dars (ghdars.uspcasw@faculty.muet.edu.pk)

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

Mr. Muhammad Ali

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

Masters Int'l Public Policy, University of Tsukuba, Japan

Expertise: public policy, economics, monitoring and evaluation, networking

Dr. Jamil Ahmed

Dr. Jamil Ahmed (jamilahmed.uspcasw@faculty.muet.edu.pk)

MBBS, MPH, M.Phil. in International Health (Norway)

Expertise: Public Health in general, mother and child health & water sanitation & hygiene in particular

Students' Views about USPCAS-W

Muhammad Touseef

From Sawabi KPK; MS (IWRM)

Being part of USPCAS-W has immensely benefited my professional development and growth.



Iram Sifat

Ghizer, GB; MS (ENV.ENG.)

I appreciate Center's efforts in promoting gender equity.

Fatima Zaidi

Hyderabad Sindh; MS (IWRM)

The Center provides conducive environment to develop expertise and skills in different water-related disciplines.



Asim Ali

Khairpur Sindh; Ph.D. (ENV.ENG.)

Visiting the United States of America is a dream for many and I had the same but USPCAS-W provided me an opportunity to get my distant dream into reality.



Shoaib Ahmed

(MS-Environment Engineering)

The exchange visit significantly helped me to improve my communication, interpersonal, social and technical skills by interacting with scholarly teachers and students.

Saira Halepoto

(MS - Environment Engineering)

My exchange experience at the USA was amazing. Academically, an interactive and learning environment at UU had polished my research skills.



Muhammad Muqeet

Hyderabad Sindh; Ph.D. (ENV.ENG.)

The Center helped me in improving my knowledge and interpersonal skills.



Danyal Aziz

Swabi KPK; MS (ENV.ENG.)

Learning environment provided by the Center is very conducive and interactive.

Shamotra

Naushero Feroz Sindh; MS (HID)

Thanks to USPCAS-W for enabling me to fulfill my dreams.



Campus Map



Contact us:

USPCAS-W (Pakistani Partner University)

MUET, Jamshoro, Sindh, Pakistan

Phone: 92-22-2771226

E-mail: admissions.uspcasw@admin.mueta.edu.pk

URL: water.mueta.edu.pk

USPCAS-W (US Partner University)

University of Utah

Salt Lake City, Utah 84112

E-mail: steve.burian@utah.edu; aslam.chaudhry@utah.edu

URL: water.utah.edu