



# PROGRAMS OFFERED

- B.Sc Civil Engineering
- B.Sc Civil Engineering Technology
- MS Civil Engineering
- Master of Civil Technology
- Ph.D Civil Engineering

# MISSION STATEMENT

To serve the engineering profession by offering high quality education to create professionals and contribute towards society by providing innovative solutions with focus on research in Civil and allied disciplines.

DEPARTMENT OF

# CIVIL ENGINEERING

# Message From The Head Of Department

The Department of Civil Engineering at CECOS University offers a highly competitive and well-regarded program featuring state-of-the-art laboratories, a low student-to-faculty ratio, and hands-on learning through strong industry collaborations. Through active student chapters of professional societies and a commitment to sustainable development, our students are equipped with the technical expertise and leadership skills needed to make a positive impact on society and the environment. Embark on your journey to a successful civil engineering career with us.

**Prof. Dr. Muhammad Tariq Bashir**

Ph.D Civil Engineering, UMP, Malaysia





**Prof. Dr. Muhammad Tariq Bashir**  
Head of Department / Professor  
Ph.D Civil Engineering,  
UPM, Malaysia

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Professor  
Ph.D Structural Engineering  
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M.Sc. Structure Engineering  
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M.Sc Water Resource  
UET, Peshawar

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M.Sc M.Sc. Water Resource Engineering & Management,  
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Professor  
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Professor  
Ph.D Geotechnical Engineering,  
CECOS University

**Engr. Muhammad Hassan**  
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B.Sc Mechanical Engineering  
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Lecturer/Exam Coordinator  
MS Structural Engineering  
CECOS University

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Lecturer  
MS. Structure Engineering  
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M. Sc. Structural Engineering  
UET Peshawar

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Lecturer  
BE Civil Engineering  
M.Sc. Construction Management  
UET, Peshawar

**Engr. Muhammad Taimur Shah**  
Lab Engineer  
B.Sc Civil Engineering  
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**Col.(R ) Engr. Marwat Khan**  
Professor  
M.Sc. Structural Engineering  
UET Lahore

**Dr. Bakht Zamin**  
Professor  
Ph.D Geotechnical Engineering  
CECOS, University

**Dr. Rakhshanda Rehman**  
Assistant Professor  
Ph.D Environmental Engineering  
UET Peshawar

**Engr. Mohammad Dawood**  
Lecturer  
M. Sc. Environmental Engineering  
UET Peshawar

**Engr. Kashif Ali Khan**  
Lecturer  
M.Sc. Structural Engineering  
CECOS University

**Engr. Faizan Farid**  
Lecturer  
M. Sc. Structural Engineering  
Iqra National University, Peshawar

**Engr. Amna Khan**  
Lecturer  
Msc.  
UET Peshawar

**Engr. Ijaz Ahmad**  
Lab Engineer  
B.Sc Civil Engineering  
UET Peshawar



## CIVIL ENGINEERING LABORATORIES

- Concrete Lab
- Soil Mechanics Lab
- Transportation Engineering Lab
- Hydraulics & Fluid Mechanics Lab
- Material Testing Lab
- Surveying Lab
- Engineering Mechanics Lab
- Environmental Engineering Lab
- Computer Lab
- Drawing Hall

FACULTY MEMBERS OF  
**CIVIL ENGINEERING**



## CURRICULUM OF B.Sc CIVIL ENGINEERING

### Semester-I

Course Code	Course Title	Credit Hours
CE-103	Engineering Drawing	1+1
CE-102	Civil Engineering Materials	1+1
CS-110	Applications of Information & Communication Technologies	2+1
ENG-101	Functional English	3+0
MATH-110	Quantitative Reasoning-I	3+0
SS-203	Ideology and Constitution of Pakistan	2+0
SS-102	Pakistan Studies	2+0
SS-113	Understanding of Holy Quran-I	0+1
Total Credit Hours		14+4

### Semester-IV

Course Code	Course Title	Credit Hours
CE-121	Engineering Geology and Seismology	2+0
CE-207	Surveying-II	2+1
CE-213	Structural Analysis-I	3+0
CE-231	Fluid Mechanics-I	3+1
CE-317	Mechanics of Solids-II	2+1
MATH-108	Linear Algebra and Differential Equations	3+0
Total Credit Hours		15+3

### Semester-II

Course Code	Course Title	Credit Hours
CE-101	Engineering Mechanics	2+1
NS-102	Applied Physics and Electro-Mechanical Fundamentals	2+1
ENG-102	Expository Writing	3+0
MATH-111	Quantitative Reasoning-II	3+0
SS-101	Islamic Studies	2+0
CS-109	Computer Programming	2+1
SS-114	Understanding of Holy Quran-II	0+1
Total Credit Hours		14+4

### Semester-V

Course Code	Course Title	Credit Hours
CE-351	Quantity and Cost Estimation	2+1
CE-332	Fluid Mechanics-II	3+1
MATH-202	Numerical Analysis	3+0
CE-314	Reinforced Concrete Design-I	3+0
CE-315	Structural Analysis-II	3+0
CE-341	Environmental Engineering-I	2+0
Total Credit Hours		16+2

### Semester-III

Course Code	Course Title	Credit Hours
CE-104	Surveying-I	2+1
CE-206	Civil Engineering Drawing and Graphics	1+1
CE-211	Mechanics of Solid-I	2+1
CE-212	Concrete Technology	1+1
SS-205	Engineering Economics	2+0
MATH-106	Calculus and Analytical Geometry	3+0
SS-204	Civics and Community Engagement	2+0
Total Credit Hours		13+4

### Semester-VI

Course Code	Course Title	Credit Hours
CE-222	Geotechnical Engineering-I	3+1
CE-316	Reinforced Concrete Design-II	3+1
CE-409	Geo-Informatics	1+1
CE-442	Environmental Engineering-II	2+1
CE-361	Transportation Engineering-I	3+0
MGT-246	Introduction to Entrepreneurship	2+0
Total Credit Hours		14+4

### Semester-VII

Course Code	Course Title	Credit Hours
MGT-333	Project Management	2+0
CE-423	Geotechnical Engineering-II	3+1
CE-433	Hydraulics Engineering	2+0
CE-462	Transportation Engineering-II	3+1
CE-402	Modelling and Simulation	1+1
CE-154	Occupational Health And Safety	1+0
CE-498	Final Year Design Project-I	0+3
Total Credit Hours		12+6

### Semester-VIII

Course Code	Course Title	Credit Hours
CE-408	Architecture and Town Planning	2+0
CE-418	Steel Structures	3+0
CE-434	Irrigation Engineering	2+0
CE-435-L	Hydraulics and Hydrology (Lab)	0+1
CE-335	Engineering Hydrology	2+0
CE-352	Construction Engineering	2+0
CE-499	Final Year Design Project-II	0+3
Total Credit Hours		11+4

**Total Credit Hours = 140**

#### Fact File

**Duration:** Four Years

**Eligibility:** Minimum 60% marks in Intermediate or equivalent with Physics, Chemistry and Mathematics or DAE in relevant field.

The applicants with minimum 60% marks in Intermediate with Physics, Chemistry and Biology (Pre Medical) are also eligible with remedial course of Mathematics to be taught in Zero semester.

The applicants with minimum 60% marks in Intermediate with Physics, Mathematics and Computer Science are also eligible with Chemistry to be studied and passed as a remedial course in 1stsemester after admission.

Appearance in entrance test conducted by ETEA or any other testing body approved by PEC.

## PROGRAM EDUCATIONAL OBJECTIVE (PEOS) OF CIVIL ENGINEERING

- PEO 1:** Demonstrating a blend of engineering and professional skills in Civil Engineering and allied disciplines.  
**PEO 2:** Performing ethically and socially in a sustainable and responsible manner, as an individual and team member.  
**PEO 3:** Striving to enhance learning, research, and managerial skills.

## PROGRAM LEARNING OUTCOMES (PLOS) OF CIVIL ENGINEERING

- PLO 1:** **Engineering Knowledge:** Apply knowledge of mathematics, natural science, engineering fundamentals and Engineering specialization to the solution of complex engineering problems (WK-1-WK-4).
- PLO 2:** **Problem Analysis:** Identify, formulate, conduct research literature, and analyse complex Engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences (WK-1-WK-4).
- PLO 3:** **Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations (WK-5).
- PLO 4:** **Investigation :** Conduct investigation of complex Engineering problems using research-based knowledge and research methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK-8).
- PLO 5:** **Tool Usage:** Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex Engineering problems, with an understanding of the limitations (WK-2 and WK-6).
- PLO 6:** **The Engineer and the World:** Analyze and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment while solving complex engineering problems (WK-1, WK-5, and WK-7).
- PLO 7:** **Ethics:** Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK-9).
- PLO 8:** **Individual and Collaborative Team Work:** Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (WK-9).
- PLO 9:** **Communication:** Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, and make effective presentations, taking into account cultural, language, and learning differences (WK-1 and WK-9).
- PLO 10:** **Project Management and Finance:** Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments (WK-2 and WK-5).
- PLO 11:** **Lifelong Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK-8 and WK-9).

# CURRICULUM OF B.Sc CIVIL ENGINEERING TECHNOLOGY

## Semester-I

Course Code	Course Title	Credit Hours
MATH-106	Calculus and Analytical Geometry	3+0
CS-110	Applications of Information and Communication Technologies	2+1
ENG-101	Functional English	3+0
SS-101	Islamic Studies	2+0
SS-204	Civics and Community Engagement	2+0
CT-111	Concrete Technology	2+2
SS-113	Understanding of Holy Quran-I	0+1
MATH-100	Introduction to Mathematics*	0+0
Total Credit Hours		14+4

## Semester-IV

Course Code	Course Title	Credit Hours
CT-262	Transportation and Highway Technology	2+2
CT-102	Surveying	1+2
CT-221	Soil Mechanics	1+2
CT-213	Theory of Structures	3+0
ENG-102	Expository Writing	3+0
SS-203	Ideology and Constitution of Pakistan	2+0
Total Credit Hours		12+6

## Semester-II

Course Code	Course Title	Credit Hours
CT-104	Materials and Methods of Construction	2+1
ENG-103	Communication Skills	2+1
CT-108	Civil Engineering drawing, Drafting & Interpretation	1+2
MATH-108	Linear Algebra and Differential Equations	3+0
NS-101	Applied Physics	2+1
NS-111	Applied Chemistry	2+1
SS-114	Understanding of Holy Quran-II	0+1
Total Credit Hours		12+7

## Semester-V

Course Code	Course Title	Credit Hours
CT-332	Hydrology	1+1
CT-318	Reinforced and Prestressed Concrete	2+1
CT-353	Construction Equipment & Jobsite Practices	1+1
CT-309	Computer Aided Drawing & Building Information Modelling	1+2
CT-325	Geotechnical Investigation & Foundations	1+1
CT-371	Electro-Mechanical Technology	2+0
CT-498	Project Part -I	0+3
Total Credit Hours		8+9

## Semester-III

Course Code	Course Title	Credit Hours
CT-205	Introduction to Architecture & Town Planning	2+0
SS-102	Pakistan Studies	2+0
SS-107	Professional Ethics	2+0
CT-243	Environmental Technology	1+1
CT-231	Fluid Mechanics	2+1
CT-212	Mechanics of Solids	2+1
SS-205	Engineering Economics	2+0
Total Credit Hours		13+3

## Semester-VI

Course Code	Course Title	Credit Hours
CT-324	Geology	1+1
CT-334	Irrigation Technology	3+0
CT-317	Construction of Steel Structures	2+1
CT-354	Quantity Surveying and Estimation	1+2
CT-355	Maintenance and Repair of Civil Works	1+1
MGT-246	Introduction to Entrepreneurship	2+0
CT-499	Project Part-II	0+3
Total Credit Hours		10+8

## Semester-VII

Course Code	Course Title	Credit Hours
CT-472	GIS and remote Sensing	2+1
CT-473	Design Assessment Tools	1+1
CT-456	Building Codes and Compliance	3+0
CT-474	Smart Technologies for Facilities Management	2+1
CT-434	Drainage Technology	3+0
CT-441	Water Supply Systems	1+1
Total Credit Hours		12+4

## Semester-VIII

Course Code	Course Title	Credit Hours
CT-400	Supervised Industrial Training	0+16
Total Credit Hours		0+16

Total Credit Hours = 138

### Fact File

**Duration:** Four Years

**Eligibility:** Minimum 50% marks in intermediate or equivalent with Physics, Chemistry and Mathematics or DAE in relevant field.

The applicants with minimum 60% marks in Intermediate with Physics, Chemistry and Biology (Pre Medical) are also eligible with remedial course of Mathematics to be taught in 1st semester. Passing aptitude test of CECOS.

# PROGRAM EDUCATIONAL OBJECTIVE (PEOS) OF CIVIL ENGINEERING TECHNOLOGY

**PEO 1:** Graduate demonstrating a blend of engineering technology and professional skills in Civil Technology and allied disciplines.

**PEO 2:** Graduate performing ethically and socially in a responsible manner, as an individual and team member.

**PEO 3:** Graduate striving to enhance learning and practicing skills.

# PROGRAM LEARNING OUTCOMES (PLOS) OF CIVIL ENGINEERING TECHNOLOGY

**PLO 1:** **Engineering KnowledgeKnowledge (SA1):** An ability to apply knowledge of mathematics, natural science, Engineering Technology fundamentals and Engineering Technology specialization to defined and applied Engineering Technology procedures, processes, systems or methodologies.

**PLO 2:** **Problem Analysis(SA2):** An ability to Identify, formulate, research literature and analyze broadly-defined Engineering Technology problems reaching substantiated conclusions using analytical tools appropriate to the discipline or area of specialization.

**PLO 3:** **Design/Development of Solutions(SA3):** An ability to design solutions for broadly- defined Engineering Technology problems and contribute to the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**PLO 4:** **Investigation (SA4):** An ability to conduct investigations of broadly-defined problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

**PLO 5:** **Modern Tool Usage (SA5):** An ability to Select and apply appropriate techniques, resources, and modern technology and IT tools, including prediction and modelling, to broadly-defined Engineering Technology problems, with an understanding of the limitations.

**PLO 6:** **The Engineering Technologist and Society (SA6):** An ability to demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to Engineering Technology practice and solutions to broadly defined Engineering Technology problems.

**PLO 7:** **Environment and Sustainability (SA7):** An ability to understand and evaluate the sustainability and impact of Engineering Technology work in the solution of broadly defined Engineering Technology problems in societal and environmental contexts.

**PLO 8:** **Ethics (SA8):** Understand and commit to professional ethics and responsibilities and norms of Engineering Technology practice

**PLO 9:** **Individual and Team Work (SA9):** An ability to Function effectively as an individual, and as a member or leader in diverse teams.

**PLO 10:** **Communication (SA10):** An ability to communicate effectively on broadly defined Engineering Technology activities with the Engineering Technologist community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PLO 11:** **Project Management (SA11):** An ability to demonstrate knowledge and understanding of Engineering Technology management principles and apply these to one's own work, as a member or leader in a team and to manage projects in multidisciplinary environments.

**PLO 12:** **Lifelong Learning (SA12):** An ability to recognize the need for, and have the ability to engage in independent and life-long learning in specialist Engineering Technologies.

MS CIVIL ENGINEERING

The degree program is of a 2 year duration and spans four (16-18 week) semesters. Total credit hours for the program are 32 (i.e., 26 credit hours of coursework plus 6 credit hours of thesis and research in case of MS by research Plan-A).

In Year-II, selected students will embark on a thesis project (i.e. on basis of their CGPA, as well as synopsis defence); others will have to opt for the non-thesis track (i.e. all 32 credit hours derived from coursework Plan- B). Students with unsatisfactory performance in their thesis research will be shifted to the non-thesis track.

SCHEME OF STUDIES

MS Students must accumulate the required 30 credit hours as per the following distribution:

Plan-A

Category	Credit Hours
Core Subjects	17
Elective Subjects	09
Thesis	06
Total Credit Hours	32

Plan-B

Category	Credit Hours
Core Subjects	17
Elective Subjects	09
Additional Subjects	06
Total Credit Hours	32

M.TECH CIVIL ENGINEERING

The Masters in Technology in Civil Engineering, students are required to complete a minimum of 24 credit hours of course work, followed by 6 credit hours of industrial training

PHD CIVIL ENGINEERING

PhD is a 3 year degree program, during which the scholar must successfully complete 56 credit hours (20credit hours course work and 36 credit hours research) beside other requirements as stipulated by the HEC and the University rules & regulations.

S.No	Mater Degree Specialization	Relevant Bachelor Degrees
1	Structure Engineering	Building Engineering, Transportation Engineering
2	Geotechnical Engineering	Geological Engineering, Agriculture Engineering, Mining Engineering
3	Construction Engineering & Management	Geological Engineering, Mining Engineering, Building Engineering, Transportation Engineering
4	Water Resources & Environmental Engineering	Environmental Engineering, Agricultural Engineering, Chemical Engineering, Water Resources
		Engineering, Urban Infrastructure Engineering

MS/PhD CIVIL ENGINEERING

Curriculum for MS/PhD Civil Engineering Program

STRUCTURE ENGINEERING

Core Courses At least seven courses (including compulsory) from this group for MS Program)

Core Courses	Subject	Credit Hours
*	Research Methodology (Compulsory)	3
CE 600	Advanced Structural Analysis (Compulsory)	3
CE 601	Advanced Mechanics of Solids	3
CE 602	Design of RCC Structures (Compulsory)	3
CE 603	Pre-stressed Concrete Theory and Design	3
CE 604	Concrete and Supplementary Cementitious Materials	3
CE 605	Analysis and Design of Masonry Structures	3
CE 606	Structural Dynamics	3
CE 607	Advanced Steel Structures	3
CE 608	Finite Element Methods in Structural Analysis	3
CE 700	Structural Optimization	3
CE 701	Design of Tall Buildings and Space Structures	3
CE 702	Theory of Plate and Shell Structures	3
CE 800	Non Linear Structural Analysis	3
CE 801	Reliability Based Structural Design	3
*	Understanding of Holy Quran-I (Compulsory)	0+1
*	Understanding of Holy Quran-II (Compulsory)	0+1

Elective Courses (A maximum of three subjects from this group for MS Program)

Core Courses	Subject	Credit Hours
EM 605	Engineering Project Management	3
CE 609	Bridge Engineering	3
CE 624	Foundation Engineering	3
CE 626	Dams Engineering-I	3
CE 627	Rock Mechanics	3
CE 628	Pavement Structure and Design	3
CE 631	Materials and Design of Asphaltic Concrete	3
CE 616	Statistical Methods for Engineering Data Analysis	3
CE 670	Design of Hydraulic Structures	3
CE 671	Environmental Impact Assessment	3
CE 687	Climate Change Adaptation and Disaster Risk Reduction	3
CE 688	RS and GIS in Civil Engineering	3
CE 703	Computer Aided Design and Analysis of Structures (Pre. Requisite: CE 608)	3
CE 704	Experimental Stress Analysis	3
CE 705	Special Topics in Structural Engineering	3
CE 706	Earthquake Engineering (Pre-requisite: CE 606)	3
CE 723	Soil Structure Interaction	3
CE 741	Construction Planning, Scheduling & Control	3
CE 802	Infrastructure and Facilities Remediation	3
CE 803	Theory of Elasticity	3
CE 804	Fracture Mechanics of Engineering. Materials	3

MS-Eligibility:

Minimum 16-year education in relevant field with minimum 2.0 CGPA or 60% marks from University / DAI recognized by HEC and accredited by relevant Accreditation body (PEC,) Qualifying GAT-General Test of CECOS University or any other approved testing body (NTS/ETEA)

PhD Eligibility:

Minimum 18-year Master Degree (Research Based) in relevant field with minimum 3 CGPA from HEC recognized University. Those who have Completed Master degree by course work will be required to publish one research paper in HEC recognized Journal prior to admissions.

MS/PHD CIVIL ENGINEERING

Curriculum for MS/PhD Civil Engineering Program

WATER RESOURCE AND ENVIRONMENTAL ENGINEERING

Core Courses

At least seven courses (including compulsory) from this group for MS Program)

Core Courses	Subject	Credit Hours
*	Research Methodology (Compulsory)	3
CE 661	Wastewater Engineering, Treatment and Design	3
CE 662	Water Engineering, Treatment and Design (Compulsory)	3
CE 663	Solid Waste Management	3
CE 664	Advanced Fluid Mechanics (Compulsory)	3
CE 665	Graphical Information Systems (GIS) and Remote Sensing (RS) in WREE (Compulsory)	3
CE 667	Fluvial Hydraulics	3
CE 668	Surface water Hydrological Processes	3
*	Understanding of Holy Quran-I (Compulsory)	0+1
*	Understanding of Holy Quran-II (Compulsory)	0+1

Elective Courses (A maximum of three subjects from this group for MS Program)

Core Courses	Subject	Credit Hours
CE 669	Principles of Water and Wastewater Treatment Processes	3
CE 670	Design of Hydraulic Structures	3
CE 671	Environmental Impact Assessment (EIA)	3
CE 672	Air Pollution and Control	3
CE 673	Water Supply and Waste Water Collection Systems	3
CE 674	Environmental Analytical Techniques	3
CE 675	Marine Pollution Monitoring and Control	3
CE 676	Environmental Laws and Policies	3
CE 677	Industrial Waste Water Pollution, Control, and Management	3
CE 678	Sediment Transport	3
CE 679	Groundwater Hydrology	3
CE 761	Hydrological models	3
CE 861	Hydropower Planning and Management	3
CE 862	Membrane Technology for Water and Wastewater Treatment	3

MS-Eligibility:

Minimum 16-year education in relevant field with minimum 2.0 CGPA or 60% marks from University / DAI recognized by HEC and accredited by relevant Accreditation body (PEC,) Qualifying GAT-General Test of CECOS University or any other approved testing body (NTS/ETEA)

PhD Eligibility:

Minimum 18-year Master Degree (Research Based) in relevant field with minimum 3 CGPA from HEC recognized University. Those who have Completed Master degree by course work will be required to publish one research paper in HEC recognized Journal prior to admissions.

MS/PHD CIVIL ENGINEERING

Curriculum for MS/PhD Civil Engineering Program

ENVIRONMENTAL ENGINEERING

Core Courses At least seven courses (including compulsory) from this group for MS Program

Core Courses	Subject	Credit Hours
CE 661	Wastewater Engineering, Treatment, and Design (Compulsory)	3
CE 662	Water Engineering, Treatment and Design (Compulsory)	3
CE 663	Solid Waste Management	3
CE 669	Principles of Water and Wastewater Treatment Processes	3
CE 681	Occupational Health and Safety Engineering	3
CE 682	Biological Wastewater Treatment Processes	3
CE 683	Green Engineering Technologies	3
*	Research Methodology (Compulsory)	3
CE 671	Environmental Impact Assessment (EIA)	3
*	Understanding of Holy Quran-I (Compulsory)	0+1
*	Understanding of Holy Quran-II (Compulsory)	0+1

Elective Courses (A maximum of three subjects from this group for MS Program)

Core Courses	Subject	Credit Hours
CE 672	Air Pollution and Control	3
CE 684	Water Quality Modelling	3
CE 685	Chemistry and Biology of Water & Sewage	3
CE 673	Water Supply and Waste Water Collection Systems	3
CE 686	Water Resource Engineering	3
CE 687	Climate Change Adaptation and Disaster Risk Reduction	3
CE 674	Environmental Analytical Techniques	3
CE 675	Marine Pollution Monitoring and Control	3
CE 688	RS and GIS in Civil Engineering	3
CE 689	Ecology and Risk Assessment	3
CE 781	Principles of Environmental Engineering	3
CE 676	Environmental Laws and Policies	3
CE 881	Watershed Management	3
CE 782	Sustainable Urban Infrastructure Planning & Management	3
CE 677	Industrial Waste Water Pollution, Control, and Management	3
CE 783	Anaerobic Wastewater Treatment	3
CE 862	Membrane Technology for Water and Wastewater Treatment	3

MS/PhD CIVIL ENGINEERING

Curriculum for MS/PhD Civil Engineering Program

GEOTECHNICAL ENGINEERING

Core Courses At least seven courses (including compulsory) from this group for MS Program

Course Code	Subject	Credit Hours
*	Research Methodology (Compulsory)	3
CE 621	Advanced Soil Mechanics-I (Compulsory)	3
CE 622	Advanced Soil Mechanics-II (Compulsory)	3
CE 623	Geotechnical Investigation and Instrumentation	3
CE 624	Foundation Engineering	3
CE 625	Earth Pressures and Retaining Structures	3
CE 626	Dams Engineering-I	3
CE 627	Rock Mechanics	3
CE 616	Statistical Methods for Engineering Data Analysis	3
CE 688	RS and GIS in Civil Engineering	3
CE 721	Structural Geology	3
CE 722	Earth Structures	3
CE 821	Dams Engineering-II	3
CE 822	Application of Finite Element Methods in Geotechnical Engineering	3
CE 823	Soil Dynamics (Pre-requisite CE 621)	3
CE 824	Geotechnical Aspects of Earthquake Engineering	3
*	Understanding of Holy Quran-I (Compulsory)	0+1
*	Understanding of Holy Quran-II (Compulsory)	0+1

MS-Eligibility:

Minimum 16-year education in relevant field with minimum 2.0 CGPA or 60% marks from University / DAI recognized by HEC and accredited by relevant Accreditation body (PEC,) Qualifying GAT-General Test of CECOS University or any other approved testing body (NTS/ETEA)

PhD Eligibility:

Minimum 18-year Master Degree (Research Based) in relevant field with minimum 3 CGPA from HEC recognized University. Those who have Completed Master degree by course work will be required to publish one research paper in HEC recognized Journal prior to admissions.

Elective Courses (of most three subjects from this group for MS Program)

Core Courses	Subject	Credit Hours
CE 604	Concrete and Supplementary Cementitious Materials	3
CE 628	Pavement Structure and Design	3
CE 629	Fundamentals of Applied Geophysics	3
CE 630	Ground Water and Engineering Geophysics	3
CE 631	Materials and Design of Asphaltic Concrete	3
CE 632	Tunneling	3
CE 670	Design of Hydraulic Structures	3
CE 671	Environmental Impact Assessment	3
CE 687	Climate Change Adaptation and Disaster Risk Reduction	3
CE 704	Experimental Stress Analysis	3
CE 723	Soil Structure Interaction	3
CE 725	Application of Information Technology in Geotechnical Engineering	3
CE 726	Under Ground Construction	3
CE 741	Construction Planning, Scheduling & Control	3
CE 742	Construction Methods and Equipment	3
CE 825	Computer Aided Design	3
CE 826	Special Topics in Geotechnical Engineering	3
EM 605	Engineering Project Management	3



MS CIVIL ENGINEERING

Curriculum for MS/PhD Civil Engineering Program

CONSTRUCTION ENGINEERING & MANAGEMENT

Core Courses At least seven courses (including compulsory) from this group for MS Program)

Core Courses	Subject	Credit Hours
*	Research Methodology (Compulsory)	3
CE 641	Construction Project Administration	3
CE 642	Safety Management in Construction	3
CE 643	Construction Cost Estimation	3
CE 644	Contract Management	3
CE 645	Economic Decision Analysis in Construction	3
CE 646	Supply Chain Management in Construction Industry	3
CE 741	Construction Planning, Scheduling & Control	3
CE 742	Construction Methods and Equipment	3
*	Understanding of Holy Quran–I (Compulsory)	0+1
*	Understanding of Holy Quran–II (Compulsory)	0+1

Elective Courses (A maximum of most three subjects from this group for MS Program)

Core Courses	Subject	Credit Hours
CE 616	Statistical Methods for Engineering Data Analysis	3
CE 671	Environmental Impact Assessment	3
CE 687	Climate Change Adaptation and Disaster Risk Reduction	3
CE 688	RS and GIS in Civil Engineering	3
CE 743	Risk Analysis and Management	3
CE 744	Human Resource Management in Construction	3
CE 745	Building Information Modeling	3
CE 746	Introduction to complex systems and system dynamics	3
CE 747	Construction Claim Management	3
CE 748	Project Evaluation and Feasibility Analysis	3
CE 749	Sustainable Development and Construction	3
CE 750	Public Infrastructure Management	3

MS-Eligibility:

Minimum 16-year education in relevant field with minimum 2.0 CGPA or 60% marks from University / DAI recognized by HEC and accredited by relevant Accreditation body (PEC,) Qualifying GAT-General Test of CECOS University or any other approved testing body (NTS/ETEA)

PhD Eligibility:

Minimum 18-year Master Degree (Research Based) in relevant field with minimum 3 CGPA from HEC recognized University. Those who have Completed Master degree by course work will be required to publish one research paper in HEC recognized Journal prior to admissions.

MASTER OF TECHNOLOGY IN CIVIL ENGINEERING

Curriculum for Master of Technology in Civil Engineering Program

STRUCTURAL ENGINEERING

Course Code At least six courses (including compulsory) and Industrial Training from this group for M-Tech Program)

Core Courses	Subject	Credit Hours
CT 601	Structural Lab-1 (Concrete Testing)	3
CT 602	RCC Design	3
CT 603	Structural Workshop	3
CT 604	Concrete Technology	3
CT 605	Strength of Materials / Mechanics of Solids	3
CT 606	Structural Analysis	3
CT 607	Pre-stressed Concrete	3
CT 608	Steel Structures Design	3
CT 701	Earthquake Engineering	3
CT 702	Bridge Engineering	3
CT 703	Advanced Construction Materials &Applications	3
CT 704	Construction Technologies	3
*	Understanding of Holy Quran–I (Compulsory)	0+1
*	Understanding of Holy Quran–II (Compulsory)	0+1
CT 699	Industrial Training / Internship (Compulsory)	6

Elective Courses At maximum of four subjects from this group for M-Tech Program

Core Courses	Subject	Credit Hours
CT 728	Construction Management	3
CT 729	Construction Methods and Equipment	3
CT 705	Computer Application in Structural Technology	3
CT 706	Stability of Structures	3
CT 707	Pavement Materials and Analysis	3
CT 722	Environmental Impact Assessment	3
CT 727	Climate Change Adaptation and Disaster Risk Reduction	3
CT 629	Maps and Geospatial Concepts	3
CT 630	GPS Theory and Design	3
CT 723	Maintenance and Rehabilitation	3

M.Tech -Eligibility:

Minimum 16-year education in B. Tech, (BSc Technology) field with minimum 2.0 CGPA or 60% marks from University / DAI recognized by HEC and accredited by relevant Accreditation body (NTC) Qualifying GAT-General Test of CECOS University or any other approved testing body (NTS/ETEA)

MASTER OF TECHNOLOGY IN CIVIL ENGINEERING

CONSTRUCTION ENGINEERING & MANAGEMENT

Core Courses

At least six courses (including compulsory) and Industrial Training from this group for M-Tech Program)

Core Courses	Subject	Credit Hours
CT 621	Contract Management	3
CT 622	Construction Project Administration	3
CT 623	Construction Planning, Scheduling and Control	3
CT 624	Construction Cost Estimation	3
CT 625	Supply Chain Management in Construction Industry	3
CT 626	Safety Management in Construction	3
CT 627	Construction Methods and Equipment	3
CT 721	Building Information Modeling	3
CT 722	Environmental Impact Assessment	3
CT 723	Maintenance and Rehabilitation	3
*	Understanding of Holy Quran–I (Compulsory)	0 + 1
*	Understanding of Holy Quran–II (Compulsory)	0 + 1
CT 699	Industrial Training (Compulsory)	6

Elective Courses At maximum of four subjects from this group for M-Tech Program

Core Courses	Subject	Credit Hours
CT 628	Project Management Foundation	3
CT 629	Maps and Geospatial Concepts	3
CT 630	GPS Theory and Design	3
CT 724	Project Management Digital Tools (Primavera P6)	3
CT 725	Management of Flood Hazard	3
CT 726	Fundamentals of GIS and RS in Disaster Management	3
CT 727	Climate Change Adaptation and Disaster Risk Reduction	3

- The candidate requires 32 credit hours by studying minimum of six core subjects (14 Credit hours) including compulsory courses and Industrial Training (06 Credit hours) and maximum of four elective subjects (12 Credit hours).

M.Tech -Eligibility:

Minimum 16-year education in B. Tech, (BSc Technology) field with minimum 2.0 CGPA or 60% marks from University / DAI recognized by HEC and accredited by relevant Accreditation body (NTC)  
Qualifying GAT-General Test of CECOS University or any other approved testing body (NTS/ETEA)

POST GRADUATE DIPLOMA

HAZARDS AND DISASTER MANAGEMENT

1st Semester

Course Code	Course Title	Credit Hours
HDM-501	Introduction to Disaster Management	3
HDM-531	Research Methodology in Disaster Management	3
HDM-532	Community Based Disaster Risk Management Approaches	3
HDM-533	Fundamentals of GIS and RS in Disaster Management	3
HDM-598	Project-I	3

Total Credit Hours: 30

PROJECT AND CONTRACT MANAGEMENT

1st Semester

Course Code	Course Title	Credit Hours
PCM-501	Project Management Foundation	3
PCM-511	Project Performance and Integration	3
PCM-521	Contract Rules and Regulations	3
PCM-522	Contract Documents and Guidelines	3
PCM-598	Project-I	3

Elective Courses

Course Code	Course Title
PCM 513	Project WBS (Work Break Down Structure)
PCM 514	Project Scheduling
PCM 515	Project Estimating
PCM 516	Project Quality
PCM 524	Construction Contract Administration

Total Credit Hours: 30

2nd Semester

Course Code	Course Title	Credit Hours
HDM-511	Management of Flood Hazard.	3
HDM-512	Climate Change and Disasters	3
HDM-513	Management of Desertification Hazard	3
HDM-521	Disaster Management and Economy of Pakistan	3
HDM-599	Project-II	3

2nd Semester

Course Code	Course Title	Credit Hours
PCM-512	Project Tailoring and Artifacts	3
PCM-523	Practical use of FIDIC Contracts	3
PCM-531	Project Management Digital Tools (Primavera P6, ASANA, JIRA)	3
Elective Courses		
PCM-322	Project-II	3