

# CIVIL ENGINEERING

B.Sc Civil Engineering

B.Sc Civil Engineering Technology

## MISSION STATEMENT

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

## MESSAGE FROM THE HEAD OF DEPARTMENT

CECOS University's Department of Civil Engineering is a unique and highly sought-after program that offers state-of-the-Art laboratories, low student to faculty ratios, and real-world learning opportunities through industry connections and student chapters of professional societies. With a focus on providing services to benefit society and the environment, students are equipped with the technical skills and knowledge needed to become future leaders in the field. Join us and begin your journey toward a successful career in civil engineering.

**Prof. Dr. Muhammad Tariq Bashir**  
Ph.D Civil Engineering, UMP, Malaysia

# FACULTY OF CIVIL ENGINEERING

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B.Sc Mechanical Engineering  
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CECOS, University

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M.Sc. Structure Engineering  
UET Peshawar

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Lecturer / Academic Coordinator  
M.Sc. Water Resource Engineering  
& Management UET, Peshawar

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Lecturer  
M.Sc. Structure Engineering  
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Engr. Tayyaba Hamid  
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M.Sc Water Resource  
UET, Peshawar

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Lab Engineer M.Sc. Structure  
Engineering  
UET, Lahore

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Professor  
Ph.D Structural Engineering  
Dokuz Eylul University, Izmir, Turkey

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Ph.D. Structural Engineering  
Hanyang University, Seoul, Korea

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Assistant Professor  
Ph.D Civil Engineering &  
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Universiti Teknologi Petronas

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Lecturer  
MS. Structure Engineering  
CECOS University

Engr. Sultan Shah  
Lecturer  
M.Sc. Construction Management  
UET Peshawar

Engr. Muhammad Aadil  
Lecturer  
M.Sc. Transportation Engineering  
MCE Risalpur

Engr. Muhammad Tauqir  
Lecturer  
M. Sc. Structure Engineering  
NICE NUST Islamabad

Engr. Hamza Qureshi  
Lab. Engineer  
B.Sc Civil Engineering  
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Engr. Umar Farooq  
Lab Engineer  
B.Sc Civil Engineering  
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Col.(R) Engr. Marwat Khan  
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Assistant Professor  
M. Sc. Environmental Engineering  
UET Peshawar

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

Engr. Muhammad Waqas  
Lecturer  
M.Sc. Construction Management  
UET, Peshawar

Engr. Zeeshan Umar  
Lecturer  
M. Sc. Structure Engineering  
UET Peshawar

Engr. Muhammad Asadullah  
Lecturer  
M.Sc. Water Resource Engineering  
UET Taxila

Engr. Inam Abbas Khan  
Lecturer/Exam Coordinator  
MS Structural Engineering  
CECOS University

Engr. Asad Jamil Khalil  
Lab Engineer  
B.Sc Civil Engineering  
UET, Peshawar

Engr. Ahmad Sher Khan  
Lab Engineer  
MS Advanced Chemical Engineering  
Ph.D Environmental Engineering  
(in Progress) UET Peshawar

# CIVIL ENGINEERING LABORATORIES

Concrete Lab  
Geotechnical/Soil Lab  
Transportation Lab  
Hydraulics and Fluid Mechanics Lab  
Material Testing Lab  
Surveying Lab  
Engineering Mechanics Lab  
Environmental Engineering Lab  
Computer Lab  
Drawing Hall



## CURRICULUM OF CIVIL ENGINEERING

### Semester-I

Course Code	Course Title	Credit Hours
ENG-101	English-I	3+0
MATH-106	Calculus and Analytical Geometry	3+0
CE-101	Engineering Mechanics	3+1
CE-102	Civil Engineering Materials	1+1
CE-103	Engineering Drawing	2+1
SS-102	Pakistan Studies	2+0
Total Credit Hours		17

### Semester-II

Course Code	Course Title	Credit Hours
CE-104	Surveying-I	2+1
MATH-108	Linear Algebra and Differential Equations	3+0
CE-121	Engineering Geology and Seismology	2+0
SS-101	Islamic Studies	2+0
CE-105	Basic Electro-Mechanical Engineering	2+1
SS-107	Professional Ethics	3+0
Total Credit Hours		16

### Semester-III

Course Code	Course Title	Credit Hours
CE-211	Mechanics of Solids-I	2+1
CE-206	Civil Engineering Drawing and Graphics	2+1
CE-207	Surveying-II	2+1
SS-205	Engineering Economics	2+0
CS-109	Computer Programming	2+1
CE-212	Concrete Technology	1+1
Total Credit Hours		16

### Semester-IV

Course Code	Course Title	Credit Hours
CE-231	Fluid Mechanics-I	3+1
CE-222	Geotechnical Engineering-I	3+1
CE-213	Structural Analysis-I	3+0
MATH-202	Numerical Analysis	3+0
ENG-102	English-II	3+0
Total Credit Hours		17

### Semester-V

Course Code	Course Title	Credit Hours
CE-351	Quantity and Cost Estimation	2+1
CE-332	Fluid Mechanics-II	3+1
MATH-211	Probability and Statistics	3+0
CE-352	Construction Engineering	2+0
CE-314	Reinforced Concrete Design-I	3+0
CE-315	Structural Analysis-II	3+0
Total Credit Hours		18

### Semester-VI

Course Code	Course Title	Credit Hours
CE-335	Engineering Hydrology	2+1
CE-341	Environmental Engineering-I	2+0
CE-316	Reinforced Concrete Design-II	3+1
CE-317	Mechanics of Solids-II	2+1
CE-361	Transportation Engineering-I	3+0
ENG-203	English-III	3+0
Total Credit Hours		18

### Semester-VII

Course Code	Course Title	Credit Hours
CE-423	Geotechnical Engineering-II	3+1
CE-408	Architecture and Town Planning	2+0
CE-442	Environmental Engineering-II	2+1
CE-462	Transportation Engineering-II	3+1
CE-433	Hydraulics Engineering	2+1
CE-498	Final Year Design Project-I	0+3
Total Credit Hours		19

### Semester-VIII

Course Code	Course Title	Credit Hours
CE-434	Irrigation Engineering	2+0
CE-453	Construction Management	2+1
CE-418	Steel Structures	3+0
CE-409	Geo-Informatics	1+1
CE-401	Hazards and Disaster Management	2+0
CE-499	Final Year Design Project-II	0+3
Total Credit Hours		15

Total Credit Hours = 136

#### Fact File

Duration: Four Years

Eligibility: a. Minimum 60% marks in Intermediate with Physics, Chemistry and Mathematics or DAE in Civil Technology or relevant field. 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 1st semester after admission.  
b. Minimum 33% marks in 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

- PEO 1: **Engineering Knowledge:** An ability to apply knowledge of mathematics, science and engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- PEO 2: **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- PEO 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.
- PEO 4: **Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
- PEO 5: **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.
- PEO 6: **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
- PEO 7: **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- PEO 8: **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- PEO 9: **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and/or multi disciplinary settings.
- PEO 10: **Communication:** An ability to communicate effectively, orally as well as in writing 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 documentations, make effective presentations, and give and receive clear instructions.
- PEO 11: **Project Management:** Ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team to manage projects in a multidisciplinary environment.
- PEO 12: **Lifelong Learning:** An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

## CURRICULUM OF CIVIL ENGINEERING TECHNOLOGY

### Semester-I

Course Code	Course Title	Credit Hours
MATH-106	Calculus & Analytical Geometry	3+0
CS-190	Introduction to Computer Fundamentals	1+2
ENG-103	Communication Skills	3+0
SS-101	Islamic Studies	2+0
CT-111	Concrete Technology	2+2
Total Credit Hours		15

### Semester-II

Course Code	Course Title	Credit Hours
SS-102	Pakistan Studies	2+0
CT-251	Quantity Surveying and Contract Documents	1+2
CT-221	Soil Mechanics	2+1
CT-231	Fluid Mechanics	2+1
CT-212	Mechanics of Solids	2+2
CT-205	Introduction to Architecture and Town Planning	2+0
Total Credit Hours		17

### Semester-III

Course Code	Course Title	Credit Hours
CT-332	Hydrology	2+1
CT-314	Reinforced Concrete Structures	2+1
CT-352	Construction and Hydraulic Machinery	3+0
CT-307	Computer Aided Building Modeling and Design	1+2
CT-322	Foundation Engineering	2+1
SS-205	Engineering Economics	2+0
Total Credit Hours		17

### Semester-IV

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

### Semester-II

Course Code	Course Title	Credit Hours
CT-101	Civil Engineering Drawing	1+2
CT-102	Surveying	2+2
CT-103	Applied Mechanics	2+2
CT-104	Materials and Methods of Construction	2+2
MATH-108	Linear Algebra and Differential Equations	3+0
Total Credit Hours		18

### Semester-IV

Course Code	Course Title	Credit Hours
CT-261	Transportation Engineering	2+2
CT-241	Water Supply and Waste Water Management	2+1
CT-242	Environmental Management	2+1
CT-213	Theory of Structures	3+0
CM-206	Occupational Health and Safety Management	2+0
ENG-202	Technical Report Writing	3+0
Total Credit Hours		18

### Semester-VI

Course Code	Course Title	Credit Hours
CT-315	Pre-Stressed and Pre-Cast Concrete	3+0
CT-323	Geology & Earthquake Engineering	3+0
CT-333	Irrigation & Hydraulic Structures	2+1
CT-316	Steel Structures	2+0
MGT-333	Project Management	3+0
CT-499	Project	0+3
Total Credit Hours		17
CT-499	Project (Continued- 6th Semester Summer)	0+3

### Semester-VIII

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

Total Credit Hours = 137

#### Fact File

Duration: Four Years

Eligibility: Minimum 50% marks in DAE Civil or relevant field or Minimum 50% marks in F.Sc Pre-Engineering

## PROGRAM EDUCATIONAL OBJECTIVE (PEOs) OF CIVIL ENGINEERING TECH

- 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 sustainable and 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 TECH

- PEO 1: Engineering Technology Knowledge (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.
- PEO 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.
- PEO 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.
- PEO 4: Investigation (SA4): An ability to conduct investigations of broadly-defined problems; locate, search and select relevant data from codes, databases and literature, design and conduct experiments to provide valid conclusions.
- PEO 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.
- PEO 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.
- PEO 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.
- PEO 8: Ethics (SA8): Understand and commit to professional ethics and responsibilities and norms of Engineering Technology practice.
- PEO 9: Individual and Team Work (SA9): An ability to Function effectively as an individual, and as a member or leader in diverse teams.
- PEO 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.
- PEO 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.
- PEO 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.