

Department of Civil Engineering

Civil Engineering is known as an art of directing the great sources of power in nature for the use and convenience of human beings. Civil Engineering includes the research, development, planning, design, construction and maintenance associated with urban development, water supply, structure, energy generation and transmission, water treatment and disposal, and transportation systems. With the rapid increase in urbanization and industrialization, Civil Engineering has developed as a vibrant and challenging profession. Carving out meaningful careers in the arenas of building and managing infrastructures and sustaining environmental resources, civil engineers have to adopt the pace of technological change that could be an exciting and potentially rewarding challenge.

Program Offered:

Bachelor of Civil Engineering

Vision

To provide quality education/training to bring up technical manpower in the field of Civil Engineering with the competency to take on challenges of engineering profession and society.

Mission

The aim of department of Civil Engineering is to educate students in both theory and practice of core Civil Engineering areas. Our focus is to impart knowledge which will allow the students to solve the problems of their community and make them useful person. Our program provides vast potentials at the frontier of knowledge and innovation.

Bachelor of Civil Engineering

Minimum Duration : 8 Semesters, 4 Years
 Maximum Duration : 14 Semesters, 7 Years
 Minimum CGPA required to earn degree 2.00

Program Code 074
 Number of Courses 44
 Credit Hours 135

Program Educational Objectives (PEOs) :

Industrial and societal demands play important roles in formulating the learning outcomes of program. The formulation of PEOs for each program was based on the Vision and Mission, of the Department. The PEOs were designed to address the requirements and expectation of various stakeholders.

PEO1: **Engineering Practice:** Graduates will play an effective role with quality assurance while practicing civil engineering and will become experts at national and international level.

PEO2: **Professional Growth:** Graduates will enhance and improve their skills through professional growth and development activities.

PEO3: **Societal Service:** Graduates will serve the society and engineering profession with ethics considering social, environmental, national, and global concerns.

Outcome Based Education (OBE) System :

OBE is an approach of curriculum design and teaching that focuses on what students should be able to do (attain) at the end of course/program. The Undergraduate curriculum at Department of Electrical Engineering, Sarhad University was transformed into adopting OBE from Spring 2018 in accordance with requirements from: Pakistan Engineering Council Accreditation Manual 2014 and to satisfy the requirements of Washington Accord 2013. The framework for OBE in the electrical engineering department and the process control mechanism consists of four different phases i.e. design, assess, analyze and review. For each of the phases Program Educational Objectives (PEOs), Program Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs), are defined.

Eligibility :

- I. Candidates who have passed Intermediate (Pre-Engineering Examination) with the subjects of Mathematics, Physics, and Chemistry from a recognized BISE in Pakistan or any other equivalent examination with at least 60% unadjusted marks.
- II. Candidates possessing 3-Year Post-Matric Diploma of Associate Engineer in the relevant Technology with at least 60% unadjusted marks.

All candidates are required to appear in ETEA/centralized entry test.

Foreign students need to pass entry/aptitude test conducted by the University. For further details please clause 4 in Rules & Regulations.

SEMESTER ONE	Course Code	Course Title	Cr. Hrs. 18
	CE 103	Engineering Mechanics	3-0
	CE 103L	Engineering Mechanics Lab	0-1
	CE 101	Engineering Drawing	1-0
	CE 101L	Engineering Drawing Lab	0-2
	CS 116	Computer Programming	2-0
	CS 116L	Computer Programming Lab	0-1
	MA 101	Calculus & Analytical Geometry	3-0
	ENG 111	Basic Communication Skills	3-0
	GS 128	Pakistan Studies	2-0

SEMESTER TWO	Course Code	Course Title	Cr. Hrs. 17
	CE 105	Mechanics of Solids I	2-0
	CE 105L	Mechanics of Solids I Lab	0-1
	CE 102	Civil Engineering Materials	2-0
	CE 102L	Civil Engineering Materials Lab	0-1
	GS 123	Islamic Studies (for Muslims) OR	2-0
	GS 240	Values, Ethics, & Society	2-0
	EE 102	Basic Electro-Mechanical Engineering	2-0
	EE 102L	Basic Electro-Mechanical Engineering Lab	0-1
	MA 242	Applied Differential Equations	3-0
	GS 119	Engineering Geology & Seismology	3-0

Program Learning Outcomes (PLOs):

- PLO-01 **Engineering Knowledge** :An ability to apply knowledge of mathematics , science , engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- PLO-02 **Problem Analysis**:An ability to identify, formulate , research literature , and analyze complex engineering problem sreachng substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- PLO-03 **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.
- PLO-04 **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.
- PLO-05 **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, withan understanding of the limitations.
- PLO-06 **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.

SEMESTER THREE

Course Code	Course Title	Cr. Hrs.
CE 234	Structural Analysis I	3-0
CE 202	Engineering Surveying I	3-0
CE 202L	Engineering Surveying I Lab	0-1
CE 223	Fluid Mechanics I	3-0
CE 223L	Fluid Mechanics I Lab	0-1
CE 213	Building Construction & Drawing (Pre-Req:CE101)	2-0
CE 213L	Building Construction & Drawing Lab (Pre-Req:CE101)	0-1
MA 226	Numerical Analysis	3-0

SEMESTER FOUR

Course Code	Course Title	Cr. Hrs.
CE 209	Geotechnical Engineering-I	3-0
CE 209L	Geotechnical Engineering-I Lab	0-1
CE 215	Mechanics of Solids-II (Pre-Req:CE105)	3-0
CE 207	Concrete Technology	2-0
CE 207L	Concrete Technology Lab	0-1
GS 221	Professional Ethics	2-0
GS 250	Geoinformatics	2-0
GS 250L	Geoinformatics Lab	0-1
CS 260	Quality Surveying & Estimation	3-0

SEMESTER FIVE

Course Code	Course Title	Cr. Hrs.
CE 331	Structural Analysis-II (Pre-Req:CE234)	3-0
CE 302	Fluid Mechanics-II (Pre-Req:CE223)	3-0
CE 302L	Fluid Mechanics-II Lab (Pre-Req:CE223)	0-1
CE 303	Engineering Surveying-II (Pre-Req:CE202)	3-0
CE 303L	Engineering Surveying-II Lab (Pre-Req:CE202)	0-1
CE 304	Transportation Engineering I	3-0
MA 313	Probability & Statistics	3-0

SEMESTER SIX

Course Code	Course Title	Cr. Hrs.
CE 305	Reinforced Concrete Design-I	3-0
CE 326	Environmental Engineering-I	2-0
CE 326L	Environmental Engineering-I Lab	0-1
CE 314	Hydrology and Water Management	2-0
CE 308	Geotechnical Engineering-II (Pre-Req:CE209)	3-0
CE 308L	Geotechnical Engineering-II Lab (Pre-Req:CE209)	0-1
ENG 323	Technical Report Writing & its Presentation	3-0

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- PLO-07 **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.
- PLO-08 **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- PLO-09 **Individual and Team Work**:An ability to work effectively , as an individual or in a team, on multi faceted and / or multi disciplinary settings.
- PLO-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 report sand design documentation , make effective presentations ,and give and receive clear instructions.
- PLO-11 **ProjectManagement**: An 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 multi disciplinary environment.
- PLO-12 **LifelongLearning**:An ability to recognize importance of , and pursue life long learning in the broader context of innovation and technological developments.

SEMESTER SEVEN		
Course Code	Course Title	Cr. Hrs. 18
CE 401L	Civil Engineering Software Applications	0-2
CE 412	Transportation Engineering-II (Pre-Req:CE304)	3-0
CE 412L	Transportation Engineering-II Lab (Pre-Req:CE304)	0-1
CE 409	Architecture & Town Planning	2-0
CE 403	Steel Structures	3-0
MGT 313	Construction Management	3-0
MGT 313L	Construction Management Lab	0-1
RES 480	Final Year Project (Part I)	0-3
SEMESTER EIGHT		
Course Code	Course Title	Cr. Hrs. 15
CE 408	Irrigation Engineering	3-0
CE 423	Geotechnical Design (Pre-Req:CE308)	3-0
CE 445	Reinforced Concrete Design-II (Pre-Req:CE305)	3-0
CE 407	Environmental Engineering-II (Pre-Req:CE326)	2-0
CE 407L	Environmental Engineering-II Lab	0-1
RES 480	Final Year Project (Part II)	0-3

Hierarchical Model of Outcomes at SUIT

Vision and Mission Statements
of SUIT/Faculty/Department



Program Educational Objectives (PEOs)



Program Learning Outcomes (PLOs)



Course Learning Outcomes (CLOs)