



# Mehran University of Engineering and Technology, Jamshoro

## Department of Civil Engineering

### Details of Courses, CLOs, Taxonomy Levels and PLOs

S. No	Semester	Course Title	CLO No.	CLO Description	Taxonomy Level	PLO
01	1 <sup>st</sup>	Geometrical Drawing	1	PREPARE orthographic projections of points, lines, planes and solids.	C3	1
			2	PRACTICE orthographic projections of points, lines, planes and solids.	P3	1
			3	MAKE isometric view of solids.	P4	1
02	1 <sup>st</sup>	Civil Engineering Materials	1	EXPLAIN various materials and their physical characteristics used in different types of civil engineering works.	C2	1
			2	ILLUSTRATE the suitability of different materials and their behaviour for their use in civil engineering projects.	C3	4
			3	CARRYOUT and PRACTICE various laboratorial and field tests to obtain physical properties of different materials.	P3	4



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03	1 <sup>st</sup>	Engineering Mechanics	1	ANALYZE the two-dimensional Force System and Equilibrium conditions by applying the basic principles of statics.	C4	2
			2	APPLY fundamental concepts of kinetics and kinematics to the analysis of a body when it is subjected to different types of motion.	C3	1
			3	DEMONSTRATE external behavior of bodies subject to force system and equilibrium.	P4	4



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01	2 <sup>nd</sup>	Surveying-I	1	DISCUSS various survey equipment and techniques to be used for linear and angular measurements and for computing the areas of plots.	C2	1
			2	PREPARE the L-section and X-section using the computations of levels.	C3	2
			3	EXECUTE various surveying instruments used for linear and angular measurements.	P4	5
02	2 <sup>nd</sup>	Civil Engineering Drawing	1	PREPARE plans, elevations and sections of various civil engineering works.	C3	1
			2	ILLUSTRATE Electrical and Plumbing drawings.	C3	1
			3	MAKE drawings of civil engineering works using modern tools.	P4	5



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03	2 <sup>nd</sup>	Engineering Geology	1	IDENTIFY the minerals, rocks, and their physical properties.	C1	1
			2	DISCUSS structural geology, geo-hazards, hydrogeology, tunnelling and site for the important Civil Engineering projects.	C2	1
			3	MAKE drawing of cross sections and landslide models and recognize the physical and chemical properties of rocks and minerals; and folds and faults in rocks.	P4	4



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01	3 <sup>rd</sup>	Surveying-II	1	APPLY different survey techniques for indirect linear measurements in horizontal and vertical plane, and measurements in water bodies and larger areas.	C3	2
			2	USE data for setting out of curves on highways and setting out works for different structures.	C3	3
			3	CONDUCT the various survey tasks in groups.	P4	5
02	3 <sup>rd</sup>	Transportation Engineering	1	APPLY concepts of transportation systems and its planning in solving urban transportation problems.	C3	3
			2	APPLY the principles of transportation engineering to solve the problems that are most likely to be encountered in the planning and design of railways and coastal structures	C3	3



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				based on best practices and guidelines.		
03	3 <sup>rd</sup>	Strength of Materials-I	1	SOLVE problems related to simple stress and strain in members subjected to linear.	C3	1
			2	ANALYZE simple beams subjected to simple bending loads and explain torsion and energy theory.	C4	2
04	3 <sup>rd</sup>	Fluid Mechanics & Hydraulics	1	DESCRIBE the concepts related to fluid statics, kinematics, dynamics and simulation model of a real hydraulic structure.	C2	1
			2	SOLVE problems related to various open channel x-sections and flow based on hydraulic energy & momentum principles.	C3	2
			3	PRACTICE experiments to verify the theoretical principles of fluid mechanics & hydraulics engineering.	P3	4



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01	4 <sup>th</sup>	Theory of Structures	1	ANALYZE shear force and bending moment in beams and frames.	C4	2
			2	EVALUATE axial forces in Trusses; axial force, shear force and bending moment in arches; buckling of columns and influence lines and moving loads.	C5	2
02	4 <sup>th</sup>	Applied Hydraulics	1	ANALYZE states of flow with respect to water surface and channel bed profiles due to sediment transport in open channels.	C4	2
			2	DESIGN effective solution (flow computation) of pipes looping, branching, network and water hammer problems.	C6	3
			3	MANAGE experimentally the open channel, pipe network flows and investigate technically the usage of hydraulic machines in daily life and their effect on environment.	P5	4
			1	DISCUSS different construction	C2	1



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03	4 <sup>th</sup>	Construction Engineering		methodologies being used in construction industry.		
			2	APPLY acquired knowledge to supervise different components of building works.	C3	2
04	4 <sup>th</sup>	Strength of Materials-II	1	ANALYZE plane stress and strain in the members subjected to various loading conditions.	C4	2
			2	ANALYZE the horizontal shear stress/force in thin walled sections and circular sections within the elastic limits; and describe unsymmetrical bending, curved beams, theories of failure, creep, fatigue and inelastic materials.	C4	2
05	4 <sup>th</sup>	Architecture & Town Planning	1	EXPLAIN the concepts of Architecture and its implications on Engineering and Design.	C2	1





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			2	APPLY the principles of town planning in the development of modern cities and towns based on best practices and guidelines.	C3	3
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S No.	Semester	Course Title	CLO No.	CLO Description	Taxonomy Level	PLO
01	5 <sup>th</sup>	Structural Analysis	1	SOLVE beams, frames and trusses for deflections and slopes in determinate and indeterminate structures	C3	3
			2	ANALYZE the structures by modern analytical methods.	C4	2
02	5 <sup>th</sup>	Plain & Reinforced Concrete	1	DESCRIBE various properties of concrete and its ingredients.	C2	1
			2	DESIGN various structural elements of reinforced concrete.	C6	3
			3	PRACTICE laboratory tests on concrete and its ingredients.	P3	4
03	5 <sup>th</sup>	Environmental Engineering-I	1	DESCRIBE the characteristics of potable water used in daily life, environmental legislations and management.	C2	1
			2	DESIGN the water treatment plants and water distribution networks.	C6	3
			3	PRACTICE various laboratory and field tests to obtain physical, chemical	P3	4



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				and biological properties of water.		
04	5 <sup>th</sup>	Project Management	1	DESCRIBE primary theoretical knowledge of Project Management in the field of Engineering and construction industry.	C2	11
			2	DISCUSS essential theoretical knowledge of complete project life cycle of construction projects and their related issues.	C2	11
05	5 <sup>th</sup>	Communication Skill	1	The Students will be able to draft varied texts including formal letters, CV, cover letter for jobs, and Technical Reports using mechanisms of academic writing integrated with paraphrasing and summarizing techniques.	C3	10



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			2	The Students will be able to understand, interpret and infer the texts critically and apply the knowledge in real life situations by participating in public speaking acts and group discussions.	C2	10
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01	6 <sup>th</sup>	Hydrology	1	EVALUATE the occurrence, movement and distribution of water in the atmosphere, at the ground surface and within the sub-surface.	C5	4
			2	DESCRIBE various methods of flood estimation, flood routing and flood control.	C2	2
			3	CONDUCT the laboratory and software-based experiments regarding surface and sub-surface hydrology.	P4	5
02	6 <sup>th</sup>	Soil Mechanics	1	DEMONSTRATE index properties of soils and carry out classification of soils.	C3	4
			2	ANALYZE the range of soil related problems especially those involving in-situ stresses, flow of water through	C4	4



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				soils and consolidation settlement of soils.		
			3	PRACTICE laboratory testing to determine index properties of soil, flow of water through soil and consolidation parameters of soil.	P3	4
03	6 <sup>th</sup>	Reinforced & Prestressed Concrete	1	DESIGN basic reinforced concrete structural members.	C6	3
			2	DESIGN various prestressed concrete members.	C6	3
			3	PRACTICE experiments on hardened properties of concrete.	P3	4
04	6 <sup>th</sup>	Steel Structures	1	DISCUSS the properties of steel and basic concepts related to design of steel structures along with design loads.	C2	1
			2	DESIGN main structural members and connections of steel structures.	C6	3



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05	6 <sup>th</sup>	Geometric Design of Highways and Airports	1	DISCUSS design controls for geometric elements of highways and airports.	C2	1
			2	DESIGN geometric parameters of Highways and airports.	C6	3
06	6 <sup>th</sup>	Entrepreneurship	1	Develop advanced knowledge on how to assess business opportunities and an in-depth understanding of what typically characterize successes and failures.	A1	6
			2	Develop advanced knowledge about key processes necessary to bring new products and services to market and key challenges faced by the entrepreneur at different stages.	A1	6,7
			3	Assess the commercial viability of new technologies, business opportunities and	C6	8,12



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				existing companies.		
			4	Plan, organize, and execute a project or new venture with the goal of bringing new products and service to the market.	P6	9,10,11





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01	7 <sup>th</sup>	Structural Design & Drawing	1	DESIGN various reinforced concrete structural members.	C6	3
			2	DESIGN preliminarily the RCC bridges and Tall buildings.	C6	3
			3	PRACTICE on various structural software for design and analysis of different structures and structural components.	P3	5
02	7 <sup>th</sup>	Geotechnical Engineering	1	EXPLAIN various soil improvement techniques, their applications and equipment.	C2	5
			2	ANALYZE the range of soil related problems especially those involving external stresses, shear strengths, earth retaining structures and slope stability.	C4	4
			3	PRACTICE laboratory testing to determine compaction characteristics and shear strength parameters of soil.	P3	4



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03	7 <sup>th</sup>	Irrigation Engineering	1	DESCRIBE soil-water-crop relationships	C2	2
			2	DESIGN irrigation canals and related hydraulic structures.	C6	3
			3	PRACTICE the field and software experimentation to verify crop water requirements for designing of irrigation scheduling	P3	5
04	7 <sup>th</sup>	Quantity Surveying & Estimation	1	CALCULATE quantities of various civil engineering works.	C3	2
			2	ANALYZE cost of construction project and discuss contract award procedure	C4	4



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01	8 <sup>th</sup>	Foundation Engineering	1	DISCUSS soil investigation techniques, in situ tests and equipment.	C2	5
			2	DESIGN shallow and pile foundations; and discuss earthen dam components including design parameters.	C6	3
02	8 <sup>th</sup>	Environmental Engineering-II	1	DESCRIBE various characteristics of municipal and industrial wastewater and its composition, solid waste management, air and noise pollution.	C2	1
			2	EXPLAIN wastewater collection and conveyance systems, understanding the management tools for solid waste reduction, reuse and recycling.	C2	2
			3	DESIGN the wastewater treatment plant and	C6	3,7



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				manage the hazardous waste for societal and environmental sustainability.		
03	8 <sup>th</sup>	Construction Planning & Management	1	APPLY the knowledge of deterministic and probabilistic models for project planning and scheduling.	C3	11
			2	APPLY the knowledge of value engineering and construction economics for appraisal of different construction projects.	C3	11
04	8 <sup>th</sup>	Drainage Engineering	1	CATAGORIZE the situations that necessitate drainage of agricultural lands.	C4	4
			2	DESIGN, operate and maintain the surface and sub-surface drainage systems for sustainable agriculture.	C6	3,7
05	8 <sup>th</sup>	Traffic Management and Engineering	1	APPLY basics of traffic engineering for effective traffic management.	C3	3
			1	DESIGN Rigid and Flexible pavements.	C6	4



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			1	PRACTICE to investigate properties asphalt mix and capacity analysis of road segments.	P3	4
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