

COURSE LEARNING OUTCOME (CLOs) BATCH 2019

Semester	CLOs	CLO Statement: At the end of this course, students will be able to:	PLOs	Bloom's
1 Fall	Engineering Surveying-I (UE-118)			
	CLO-1	Able to describe the principles of engineering surveying.	Engineering Knowledge	C-2
	CLO-2	Able to observe readings of surveying instruments.	Individual and Team Work	S-1
	CLO-3	Able to solve land surveying problems.	Problem Analysis	C-3
2 Spring	Engineering Drawing and Drafting-I (UE-117)			
	CLO-1	Capability to acquire the basic engineering knowledge related to solid objects.	Engineering Knowledge	C-1
	CLO-2	Capability to draw the basic shapes in two and three dimensional plane.	Modern Tool Usage	C-3
	CLO-3	Able to practice engineering drawing manually and through softwares with supervision.	Communication	S-3
	Statics and Dynamics (UE-102)			
	CLO-1	Able to apply the basic principles of engineering mechanics and able to apply learning in new situations through their problem analysis capability.	Engineering Knowledge	C-3
	CLO-2	Able to use the mathematical tools and the standard procedures to determine internal loadings in members of truss, beam, frame and cable with good problem solving skills.	Problem Analysis	C-3
	CLO-3	Able to use their creativity, imagination and knowledge to practice skills of analysis or design as required by the engineering discipline.	Investigation	S-3
	Engineering Materials (UE-104)			
	CLO-1	Able to select, describe and recognize building materials based on manufacturing methods, types, properties and uses.	Engineering Knowledge	C-1

	CLO-2	Able to solve complex engineering problems related to concrete mix design based on experimental values.	Problem Analysis	C-3
	CLO-3	Able to perform, manipulate laboratory tests related to different engineering materials and also able to answer freely about the practical procedure.	Investigation	S-3 A-2
Functional English (HS-111)				
	CLO-1	DELIVER effective presentations and participate actively in group discussions.	Communication	A3
	CLO-2	COMPLETE Academic Writing tasks using writing process and strategies according to genres.	Communication	C-3
	CLO-3	USE Language Skills and Strategies in different situations and for a variety of functions.	Life- long Learning	A4
3 Fall	Engineering Surveying - II (UE-201)			
	CLO-1	Able to calculate areas and volume from topographic maps and able to solve problems related to highways and railroad curves.	Problem Analysis	C-3
	CLO-2	Able to describe concepts of geospatial positioning, construction and bathymetric survey.	Engineering Knowledge	C-2
	CLO-3	Able to operate digital equipments in the field of surveying.	Modern Tool Usage	S-3
	Mechanics of Solids -I (UE-251)			
	CLO-1	Able to use the concepts of material strength and their behavior under loads.	Engineering Knowledge	C-3
	CLO-2	Able to analyze structural components like beams, shafts and thin and thick walled cylinders.	Problem Analysis	C-4 A2
	CLO-3	Able to apply knowledge in investigation of stresses.	Investigation	C-4
	CLO-4	Able to develop skills for identifying appropriate materials for Civil engineering structures.	Lifelong Learning	S-2

	Business Communication (HS-218)		
	CLO-1	CONFORM to the framework of Communication in all professional and organizational communications.	Communication A-3
	CLO-2	COMMUNICATE orally in interpersonal and presentation situations.	Communication C-3
	CLO-3	DEVELOP written communications effectively using variety of technical genres.	Communication C-3
	Intro to Computing for Civil Engineering (UE-155)		
	CLO-1	Ability to perform computations and data analysis using spread sheet software.	Communication S-3
	CLO-2	Ability to describe and work on simple database using database software.	Modern Tool Usage C-2 S-3
	CLO-3	Ability to apply the programming skills to solve basic engineering problems using computer programming software (MATLAB).	Lifelong Learning C-3 S-3
	Geology for Engineers (UE-252)		
	CLO-1	Able to identify interior parts of the earth, Define crystals, rocks and minerals, Identify geological structures.	Engineering Knowledge C-1
	CLO-2	Able to describe process of internal and external origin, properties of rocks and aggregates.	Engineering Knowledge C-2
	CLO-3	Able to recognize minerals, rocks and geological structures and processes.	Investigation S-1
4 Spring	Engineering Drawing -II (UE-253)		
	CLO-1	ILLUSTRATE architectural aspects of civil engineering projects through drawings.	Engineering knowledge C-3
	CLO-2	ILLUSTRATE structural aspects of civil engineering projects through drawings.	Engineering knowledge C-3
	CLO-3	APPLY of computers aided tools in engineering drawing.	Modern tool usage P-3
	Fluid Mechanics-I (UE-254)		
	CLO-1	DESCRIBE the basic concepts and principles of fluid mechanic.	Engineering Knowledge C-2

	CLO-2	APPLYING the basic fluid principles in general engineering problem.	Problem Analysis	C-3
	CLO-3	OBSERVE basic fluid properties and flow types.	Engineering Knowledge	P-1
	Structure Analysis -I (UE-255)			
	CLO-1	DEFINE load types, structural safety, stress and deformation.	Engineering Knowledge	C-1
	CLO-2	DESCRIBE determinacy of structures, compatibility, boundary conditions etc.	Engineering Knowledge	C-2
	CLO-3	ANALYSE forces and deformations in structural components like beams, trusses, arches etc.	Problem Analysis	C-4
	Professional Ethics (HS-219)			
	CLO-1	KNOW the contemporary framework of Professional Ethics.	Engineers and society	A
	CLO-2	ANALYZE and solve problems using ethical problem-solving process and techniques.	Ethics	C-4
	CLO-3	DEMONSTRATE and follow ethical codes and values to promote ethical culture.	Individual and team work	C-3
	CLO-4	RECOGNIZE and value professional, aspirational, and collective ethics for continual professional development.	Life-long learning	A
	Applied Economics for Engineers (CF-303)			
	CLO-1	DISCUSS significance of economic analysis in engineering profession.	Engineer and Society	C-2
	CLO-2	ANALYZE alternatives using economic analysis techniques to accomplish given objective.	Problem Analysis	C-4
5 Fall	Reinforced Concrete Design-I (UE-351)			
	CLO-1	DESCRIBE the basic material behaviour of reinforced concrete and mechanical properties of constituents.	Engineering Knowledge	C-2
	CLO-2	APPLY theories and models suitable for the analysis and design of RC members.	Engineering Knowledge	C-3
	CLO-3	DESIGN RC members under different loading conditions.	Design and Development of Solutions	C-4

	Construction Engineering (UE-352)			
CLO-1	DEMONSTRATE understanding of constructional aspects related to public infrastructure projects.	Engineering Knowledge	C-3	
CLO-2	ANALYZE the heavy construction equipment and operations for key project planning and management inputs.	Problem Analysis	C-4	
CLO-3	APPLY knowledge regarding building construction methodologies.	Engineering Knowledge	C-3	
	Quantity & Cost Estimations (UE-353)			
CLO-1	APPLY concept and skills for quantity take-off for different civil engineering works.	Engineering Knowledge	C-3	
CLO-2	CARRY OUT rate analysis, productivity and pricing.	Problem Analysis	C-3	
CLO-3	DISCUSS concepts related to legal and contractual aspects of cost of construction projects.	Project Management	C-2	
	Municipal engineering and Urban Management (UE-455)			
CLO-1	Able to describe various components of hydrological cycle for a catchment area.	Engineering Knowledge	C-2	
CLO-2	Able to solve problems related to Urban Storm Water System and to carry out design of services.	Problem Analysis	C-3	
CLO-3	Able to locate and apply Knowledge of Municipal Engineering and concepts of land development process.	Investigation	S-2	
	Planning & Design of Transportation system (UE-361)			
CLO-1	EXPLAIN basic concepts of planning, design and operational aspects of transportation.	Engineering Knowledge	C-2	
CLO-2	ILLUSTRATE geometric and structural design aspects of highways.	Design/Development of solutions	C-3	
CLO-3	PRACTICE experiments on highway construction material properties.	Engineering Knowledge	P-3	
6 Spring	Soil Mechanics-I (UE-305)			
	CLO-1	CARRY OUT classification of soils.	Engineering Knowledge	C-3
	CLO-2	ANALYSE soil mass for stress, seepage and settlement.	Problem Analysis	C-4

CLO-3	PRACTICE laboratory and field tests to characterize various soil parameters.	Investigation	P-3
Law and Regulatory Control Studies (UE-218)			
CLO-1	DESCRIBE the law and rights for owning the property.	The Engineer and Society	C-2
CLO-2	PREPARE and SHARE documents for project submission plans with considering by-laws non-violations.	Communication	C-3
CLO-3	DISCUSS the professional and ethical obligations for managing work at site.	Ethics	C-2
Traffic Engineering and Management (UE-356)			
CLO-1	APPLY methods for investigation of traffic related problems and evaluation of existing traffic conditions.	Investigation	C-3
CLO-2	DEVELOP plans for improved traffic operations and management.	Design/Development of Solutions	C-4
CLO-3	COLLECT, ANALYZE and PRESENT the traffic data.	The Engineer and Society	S-3
Essential in Construction Project Management (UE-355)			
CLO-1	UNDERSTAND project management knowledge areas and project management processes.	Project Management	C-2
CLO-2	ANALYZE project networks with different techniques like CPM and PERT.	Problem Analysis	C-4
CLO-3	APPLY resource planning to develop resources loading diagram and profiles.	Problem Analysis	C-3
Reinforced Concrete Design-II (UE-453)			
CLO-1	DESIGN of RC elements of superstructure.	Design/Development of Solutions	C-6
CLO-2	DESIGN of foundations substructure elements.	Design/Development of Solutions	C-6
CLO-3	DESIGN of prestressed concrete members.	Design/Development of Solutions	C-2

7 Fall	Urban Mass Transportation (UE-452)			
	CLO-1	COMPREHEND needs and significance of public mass transportation in local and international context.	Lifelong Learning	C-2
	CLO-2	COLLECT travel data, investigate travel patterns and develop transportation demand models.	Investigation	C-3
	CLO-3	DEVELOP plan for improved operations and management of public transportation systems.	Design/ Development of Solutions	C-4
	Soil Mechanics-I (UE-403)			
	CLO-1	CARRY OUT classification of soils.	Engineering Knowledge	C-3
	CLO-2	ANALYSE soil mass for stress, seepage and settlement.	Problem Analysis	C-4
	CLO-3	PRACTICE laboratory and field tests to characterize various soil parameters.	Investigation	P-3
	Hydraulic Engineering and Water Resources Engineering-I (UE-451)			
	CLO-1	EXPLAIN hydrology, hydraulics, irrigation and drainage concepts.	Engineering Knowledge	C-2
	CLO-2	ANALYZE the water resources system for water-use and water-control.	Problem Analysis	C-4
	CLO-3	PRACTICE measuring basic parameters of hydrology and hydraulic processes.	Investigation	P-4
	Structural Analysis -II (UE-359)			
	CLO-1	ANALYZE Statistically Indeterminate Structures using Classical Methods	Problem Analysis	C-4
	CLO-2	ANALYZE statistically indeterminate structures using matrix method.	Problem Analysis	C-4
	Environmental Engineering-I (EN-301)			
	CLO-1	DESCRIBE environmental pollution	Environmental Sustainability	C-2
	CLO-2	DESIGN of water treatment system	Design/Development of Solutions	C-6
	CLO-3	DETECT concentration of pollutants in environmental samples	Investigation	P-1

8 Spring	Design of Steel Structures (UE-454)			
	CLO-1	DESCRIBE the theories and models suitable for the analysis and design of structural steel members.	Engineering Knowledge	C-2
	CLO-2	DESIGN structural steel members under axial loads, flexure and shear.	Design/Development of Solutions	C-6
	CLO-3	DESIGN connections in structural steel members.	Design/Development of Solutions	C-6
	Mechanics of Solids-II (UE-360)			
	CLO-1	ANALYZE beams subjected to unsymmetrical bending, curved beams and beams on elastic foundations.	Problem Analysis	C-4
	CLO-2	APPLY of theory of elasticity under generalized loading.	Problem Analysis	C-3
	CLO-3	DISCUSS theory of plasticity and plastic analysis of beams and frames.	Problem Analysis	C-2
	Geoinformatics (UE-460)			
	Financial Resource Management (UE-435)			
	CLO-1	IDENTIFY and ANALYZE the options in obtaining the requisite finance to fund the projects	Engineering Knowledge	C-2
	CLO-2	PREPARE financial statements of any project and to analyze prospective investment in projects.	Project Management	C-3
	CLO-3	APPLY for Consumer Credits; and loans and practice the rules regarding exchange rates.	Development of Solutions	C-3
	Environmental Engineering-II (EN-401)			
	CLO-1	DISCUSS recycling and its environmental impacts.	Environment and Sustainability	C-1
	CLO-2	DESIGN wastewater treatment and disposal systems.	Design/Development of Solutions	C-6
	CLO-3	EXPLAIN elements of solid waste management system.	The Engineer and Society	C-2
CLO-3	DETECT environmental parameters in waste samples.	Investigation	P-1	