

1st SEMESTER

CTMA-101 APPLIED MATHEMATICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To describe engineering problems in differential form.	C2	2
2	To solve mathematical problems using partial and total differential equations.	C3	3
3	To solve the system of equations using various methods.	C3	3

CT-102 FUNDAMENTAL OF COMPUTING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To demonstrate the basics of computer programming.	C2	1
2	To practice the use of BASIC language and Spreadsheet software in different applications.	C3	5
3	To develop programs for solving civil engineering technology problems.	C3	3

CT-102L FUNDAMENTAL OF COMPUTING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To learn the concept of CAD/CAM and related applications.	C3	5
2	Familiarization with commercially available software in the relevant field.	C5	5

CTHU-103 COMMUNICATION SKILLS-I

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Define the basics key concepts and barriers of communication.	C 1	10
2	Define three basic skills (listening, speaking and writing) of formal communication.	C1	10
3	Explain apply key concepts of English grammar.	C 2	10

CTM-104 ENGINEERING GEOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To define the basic terminology of Geology.	C2	1
2	To describe the rocks, its types, properties, wave propagation and stability of rock slopes.	C2	1
3	To explain subsurface investigation.	C3	4
4	To apply the knowledge of Geology for the design of dams and tunnels.	C3	3
5	To identify various minerals and rocks.	C1	4

CTM-104L ENGINEERING GEOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To identify type of rocks.	P1	1
2	To perform property test on rock samples.	P3	1

CT-105 MECHANICS OF MATERIALS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To calculate important geometrical properties of plane areas.	C3	4
2	To illustrate the shear force and bending moment diagram of all types of beams.	C3	2
3	To compute the shear stresses, bending stresses, deflections and rotations in beams.	C3	2
4	To calculate the critical buckling load for long columns by Euler's Formula with various end conditions.	C3	2

CT-105L MECHANICS OF MATERIALS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize the equipment/apparatus used in mechanics of materials laboratory.	P1	2
2	To practice experiments for evaluating the mechanical properties of various materials.	P3	4
3	To demonstrate concepts related to mechanics of materials.	C3	1

CT-106 PROFESSIONAL ETHICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To understand the basic terms: Consultant, clients, contractors, designers, material providers, reviewers, arbitrators, arbitrators and their responsibilities.	C2	1
2	Role of Ethics in case of any fault in design, consultation or execution of project.	C3	8
3	Awareness of quality control and standards and how strictly these must be enforced.	C2	3
4	To learn boss-subordinate relationship, dealing with labor and their amenities and Behavior with colleagues.	C2	9

2nd SEMESTER

CT-111 TECHNICAL DRAWING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To describe orthographic/orthogonal projections and sectional views of various objects.	C2	1
2	To prepare plan, elevation and section of different buildings.	C3	10
3	To express his/her drawing sense/awareness for drawings of simple objects/structures.	A3	8
4	To understand the basics of computer graphics and CAD.	C2	1

CT-111L TECHNICAL DRAWING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To practice drawing skills to prepare projections of objects and buildings.	P3	10
2	To commit drawing sense and awareness of simple objects and buildings.	A3	10
3	To value punctuality in class participation and assignment/report submission.	C2	9

CT-108 FLUID MECHANICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To describe the physical properties of fluids.	C2	1
2	To analyze stability of floating and submerged bodies.	C4	2
3	To compute pressure and centre of pressure on submerged surfaces.	C3	2

4	To describe various kinds of flows and to prepare Hydraulic Grade Line and Energy Grade Line for pipes and open channels.	C4	2
5	To describe devices and methods to measure velocity and discharges in pipe lines and open channels.	C3	1

CE-231L FLUID MECHANICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize various apparatus in fluid lab.	P4	1
2	To execute experiments to measure fluid properties.	P1	4
3	To practice experiments to determine coefficient of discharges.	P3	4
4	To respond actively the basic concepts of the fluid statics, kinematics and hydrodynamics.	A2	10

CT-109 SURVEYING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Explain various principles and techniques of basic surveying.	C2	1
2	Apply various techniques to calculate parameters required for plotting survey maps.	C3	2

CT-109L SURVEYING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Perform the experiments related to basic surveying.	P2	9
2	Plot area maps using experimental data from modern tools.	C4	5
3	Justify application of experiments related to surveying.	A3	10

CTIS-110 ISLAMIC AND PAK STUDIES/ETHICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To discuss the Miracles, principles, characteristics of Islam and pillars of Islam.	C2	12
2	To describe and apply the dealings with women and relatives, rights of women and importance of ethics as explained in the religion.	C3	8
3	To explain the role of scholars, women, journalists in formation of Pakistan.	C2	1
4	To demonstrate the foreign policy of Pakistan and its importance.	C3	12
5	To seek ethical values in daily life.	A3	8

CT-107 MATERIALS AND METHODS OF CONSTRUCTION

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To elaborate the physical and chemical properties of various construction materials.	C3	1
2	To demonstrate suitable construction materials for surface treatment.	C3	3
3	To discuss suitable construction materials at secondary stage of construction like wood, steel, plastic, and glass work.	C2	3
4	To develop the basic understanding of construction techniques and methods of building construction.	C2	3

CT-107L MATERIALS AND METHODS OF CONSTRUCTION

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To conduct experiments for evaluating the quality of various materials used in the construction industry.	P4	4
2	To demonstrate suitable construction materials for construction projects.	C3	3
3	To exhibit concern towards time management and punctuality.	A3	8

CT-112 PRACTICAL FIELD TRAINING AND REPORT SUBMISSION - I

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To prepare a plan to manage engineering project.	C3	11
2	To apply the concept of collaboration with team members to achieve a common goal.	C3	9
3	To defend his practical training with presentable output.	A4	10

3rd SEMESTER

CT-203 SURVEYING AND APPLICATION OF GIS IN CIVIL TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To prepare topographic maps of plane and hilly areas using modern instruments and techniques.	C3	10
2	To apply the knowledge of GIS and remote sensing in advanced surveying using software's.	C3	5
3	To design various types of horizontal and vertical curves.	C6	3
4	To describe photographic and hydrographic surveys.	C2	1
5	To apply theory of errors in surveying projects.	C3	2

CT-203L SURVEYING AND APPLICATION OF GIS IN CIVIL TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Perform and demonstrate the experiments related to advanced surveying.	P1	9
2	Execute the plotting of area maps using modern tools based on experimental data.	P3	5
3	Estimate the physical parameters using experimental data.	P4	2

CT-204 CONCRETE TECHNOLOGY-I

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Concrete Properties and Behavior of freshly and hardened concrete properties	C2	1
2	Analysis and design of RC beams and columns by ultimate strength design method	C6	3
3	To distinguish between different types of slabs and design of edge supported slabs	C6	4
4	Concrete mix design method and procedure	C2	1

CT-204L CONCRETE TECHNOLOGY-I

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize the equipment used in concrete material testing.	P1	1
2	To imitate experiments related to concrete materials and on concrete in green state.	P3	4
3	To execute experiments to study the behavior of concrete specimens in hardened state	P4	4
4	Determination of aggregate properties.	P1	4

CT-205 STRUCTURAL MECHANICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Introduction to various structures, loads, stability and analysis of determinate beams, frames and trusses.	C2	1
2	Calculation of displacements using energy methods in determinate beams, frames and trusses.	C3	2
3	Analysis of statically indeterminate structures using method of least work, moment distribution, slope deflection method and using computer.	C4	5
4	To analyze the structures (arches, suspension and cable bridges) under the application of moving loads.	C4	2

CT-205L STRUCTURAL MECHANICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Plotting Maxwell's diagrams, shear and bending moment diagrams on frame models for deflections and internal forces.	C3	2
2	Drawing of shear force, bending moment diagrams and influence line diagrams using moving loads.	C4	2
3	To analyze columns subjected to various loads and end conditions.	C6	3
4	To analyze the structures (arches, suspension and cable bridges) under the application of moving loads.	C4	2

CTHU-202 COMMUNICATION SKILLS-II

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Define the basics key concepts and barriers of communication.	C1	10
2	Define three basic skills (listening, speaking and writing) of formal communication.	C1	10
3	Explain apply key concepts of English grammar.	C2	10

CTMA-201 STATISTICS AND NUMERICAL METHODS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To understand the concept of statistics.	C2	1
2	To state the concepts of Nonlinear equations.	C2	1
3	To solve the polynomial equations using numerical methods	C3	3
4	To solve the polynomial equations using numerical methods	C3	3

4th SEMESTER

CT-206 SOIL MECHANICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To describe the common terminology used in soil Mechanics.	C2	1
2	To demonstrate the soil behavior under various loadings.	C3	2
3	To describe the interaction between water and soil and the effects during static vs. flowing water on soil.	C4	4
4	To describe the types of slopes, Factors affecting stability and remedies. Types of failure and methods of analysis.	C4	3

CT-206L SOIL MECHANICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize the equipment used in classification and compaction of soils.	P1	1
2	To conduct laboratory tests for the classification and compaction of soils.	P3	4
3	To conduct the field density test, permeability test and consolidation test to determine various soil properties.	P5	5

CT-209 QUANTITY SURVEYING AND CONTRACT DOCUMENTS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Explain basic concepts related to cost estimation of civil engineering works.	C2	1
2	Calculate quantities related to various civil engineering works.	C3	2
3	Analyze rates and develop bill of quantities.	C4	4
4	Describe basic concepts related to contracts and award of works.	C2	11

CT-209L QUANTITY SURVEYING AND CONTRACT DOCUMENTS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To carry out quantity surveying in construction Projects.	C3	2
2	To apply modern technique for contract analysis of construction projects.	C3	5
3	To carry out project planning and scheduling activities using software.	C3	11

CTEN-208 WATER SUPPLY AND WASTER WATER MANAGEMENT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To illustrate the water characteristics, water distribution criteria and hydraulics of water supply system.	C2	7
2	To assesses the design of water supply scheme.	C6	6
3	To describe the various wastewater sources and hydraulics of sewerage system.	C2	7
4	To analyze the design of sewerage scheme for a community.	C3	3

CTEN-208L WATER SUPPLY AND WASTER WATER MANAGEMENT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize the equipment/material used in water supply and wastewater discharge schemes	P1	1
2	To design water supply scheme for a typical housing society.	C6	3
3	To design sewerage system for a typical housing society.	C6	3
4	To prepare drawings related to design of sewerage system	C3	6

CT-207 HYDRAULIC MACHINERY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To classify various types of flows considering fluid elements in motion.	C4	1
2	To evaluate the design of various types of turbines and pumps using impulse momentum principle.	C5	4
3	To exhibit concern towards time management, responsibility, punctuality and honesty.	A3	8

CT-207L HYDRAULIC MACHINERY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize the various types of turbine and pumps	P1	1
2	To practice experiments for the determination of head losses in pipes and verify the impulse momentum principle	P3	4
3	To conduct experiments on turbines and pump to plot their characteristics curves	P4	4

4	To obey the Health Safety and Hygiene (HSD) protocols while working in the laboratory	A2	6
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CTIS-210 ISLAMIC AND PAK STUDIES/ETHICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To explain the significance of Holy Quran, difference between Halal and Haram, Cleanliness in Islam and relationship between Muslim and Ahl-e-Kitab.	C2	7
2	To describe the believe on the Finality of Prophet (PBUH) & Believe on the Day of Judgment.	C2	8
3	To demonstrate the concepts of Ethics in light of Holy Quran.	C2	8
4	To translate the ideology of Pakistan based in the lightof speeches of Allama Iqbal and Quaid-e-Azam.	C2	12
5	To demonstrate the history, historical background of Muslim Society, their efforts and Nationalism.	C3	12

CT-211 PRACTICAL FIELD TRAINING AND REPORT SUBMISSION - II

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To prepare a plan to manage engineering project	C3	11
2	To apply the concept of collaboration with team members to achieve a common goal	C3	9
3	To defend his practical training with presentable output	A4	10

5th SEMESTER

CT-301 SOIL INVESTIGATIONS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To get familiar the basic knowledge, purpose and significance of soil investigation	C1	1
2	To understand the methods of soil investigation: shallow and deep exploration, test pits, probing, auger boring, rotary drilling and core drilling.	C2	1
3	Familiarization with In-situ testing: field density tests, SPT test, CPT test, pressure meter test, dilatometer testing, permeability testing in soil and rock	C3	2
4	Data interpretation and report writing in Geotechnical investigation	C2	2

CT-301L SOIL INVESTIGATIONS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To recognize the equipment used in determination of field density of soil.	P1	1
2	To conduct auger boring, rotary drilling and core drilling for soil exploration.	P2	4
3	To practice Standard Penetration Test in the field to ascertain bearing capacity parameters.	P3	4
4	To conduct the core cutter and field density test in order to find out the in-situ density.	P3	4

CT-302 HYDROLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To demonstrate the measurements of various meteorological parameters and estimate reservoir evaporation using pan data.	C3	1
2	To analyze stream flow hydrographs and to calculate surface & sub-surface flows.	C4	2
3	To apply various methods of flood estimation and to carryout flood routing.	C3	7

4	To exhibit concern towards time management, responsibility, punctuality and honesty.	A3	8
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CT-302L HYDROLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To investigate the effect of air temperature on saturation vapor pressure, humidity and saturation deficit	C4	4
2	To calculate surface runoff and ground water flows	C4	2
3	To analyze stream flows hydrograph	C4	2
4	To exhibit concern towards time management, punctuality and honesty	A3	8

CT-303 BRIDGE TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Introduction to bridges, types, bridge loading and hydraulic structures.	C3	1
2	To present latest design concept of steel and prestressed concrete bridges.	C6	3
3	To elaborate the shallow, deep foundation with code specification.	C3	7

CT-303L BRIDGE TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Preparation of working drawings of different structures; culverts, prestressed bridge, steel bridge, railway bridges.	C5	5
2	Preparation of bridge estimation and survey details for site selection.	C6	2

CT-304 CONCRETE TECHNOLOGY-II

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To design column supported slabs and water tanks.	C6	3
2	To design eccentrically loaded columns.	C6	3
3	To design individual and combined footings.	C6	3
4	Introduction and design of retaining walls.	C5	3
5	Testing of structures in service life	C2	5

CT-304L CONCRETE TECHNOLOGY-II

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To design concrete mixture proportions for desirable properties.	C6	3
2	To practice the non-destructive tests on concrete to find its strength.	P3	5
3	To practice the experiments to determine physical properties of concrete.	P3	4
4	To execute experiments related with the capacity of reinforced concrete short	P4	4

CT-305 ENGINEERING ECONOMICS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Acquire essential theoretical knowledge of complete project life cycle of construction projects and their related issues.	C1	11
2	Apply the knowledge of engineering economics for appraisal of different construction projects...	C3	11
3	Define principles of economics related to engineering projects	C1	1

6th SEMESTER

CTEN-306 ENVIRONMENTAL MANAGEMENT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To understand the basics of solid waste and solid waste management	C2	1
2	To describe sources and mitigation measures of air and noise pollution	C2	7
3	Introduction to NEQS and environmental protection regulatory acts	C1	8

CTEN-306L ENVIRONMENTAL MANAGEMENT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To learn about composition of solid waste management	P1	1
2	To find the percentage values of solid waste components	P3	7

CTAR-307 INTRODUCTION TO ARCHITECTURE AND TOWN PLANNING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Explain concepts of Architecture and its implications on Engineering and Design.	C2	3
2	Combine the principles of town planning in the development of modern cities and towns based on best practices and guidelines.	C6	3

CT-308 STEEL STRUCTURES

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To describe various structural systems with merits and demerits steel construction	C1	1
2	Design of tension, compression, and beam column members using LRFD specifications.	C6	3
3	To design one complete truss including all the related members such as bracing, purlins and corrugated sheet with welded joints.	C6	3
4	Design of plate girder with connections, splices and base plates.	C6	3
5	Use of computer methods to find member forces and design of different members in frame.	C6	5

CT-308L STEEL STRUCTURES

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Analysis, design and detailing of a complete roof truss with connections.	C6	3
2	Design of Plate girder and its detailed drawing.	C6	3

CT-309 RENEWABLE ENERGY RESOURCES

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To classify various types renewable energies	C4	1
2	To study use of various types of renewable energy sources in design of different productions.	C5	4
3	To exhibit concern towards time management, responsibility, punctuality and honesty.	A3	8

CT-310 PRACTICAL FIELD TRAINING AND REPORT SUBMISSION - III

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To prepare a plan to manage engineering project	C3	11
2	To apply the concept of collaboration with team members to achieve a common goal	C3	9
3	To defend his practical training with presentable output	A4	10

7th SEMESTER

CT-401 DISASTER MANAGEMENT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To discuss the key concepts and perspectives of hazards and disaster management.	C2	1
2	To describe the basic concepts of disaster management cycle.	C2	1
3	To categorize basic types of hazards and their potential consequences.	C4	4
4	To demonstrate the techniques for pre and post disaster management.	C3	3
5	To demonstrate disaster management structure of Pakistan and its challenges.	C3	6

CT-402 TRANSPORTATION ENGINEERING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To design concrete mixture proportions for desirable properties.	C6	3
2	To practice the non-destructive tests on concrete to find its strength.	P3	5
3	To practice the experiments to determine physical properties of concrete.	P3	4
4	To execute experiments related with the capacity of reinforced concrete short	P4	4

CT-402L TRANSPORTATION ENGINEERING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Explain the fundamentals of transportation engineering	C2	1
2	Apply principles of transportation engineering in geometric design using various parameters	C3	2

3	Explain fundamentals of pavement and airport engineering.	C2	1
4	Apply principles of pavement engineering to analyze and design of pavements.	C3	1

CT-403 WATER RESOURCES ENGINEERING

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To describe historical and current development of Pakistan's Water Resources in the light of various treaties.	C2	1
2	To describe various irrigation methods.	C2	1
3	To plan and design gravity irrigation system with unlined canals.	C5	3
4	To analyze the state of flow in Open channels, conduits, orifice using concepts of basic concepts of hydraulics.	C4	2
5	To compute external stability of dams & to describe their types, their selection criteria and site characteristics.	C3	2
6	To exhibit concern towards time management, responsibility, punctuality and honesty.	A3	8

CT-307 PROJECT MANAGEMENT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To learn and apply the basic concept of management.	C3	11
2	To describe the importance of productivity and related concepts.	C2	11

3	To describe the importance of project management and inventory management.	C2	11
4	To exhibit concern towards time management, responsibility, punctuality and honesty.	A3	8

CT-404 COMPUTER APPLICATION IN CIVIL TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Review of matrix operations.	C2	1
2	Introduction to finite element method.	C2	1
3	Design of a simple steel frame and Non-Prismatic member.	C5	3
4	Computer Storage, Handling and Preparation of data files	C4	2

CT-404L COMPUTER APPLICATION IN CIVIL TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Introduction to SLIDE, HECRAS and HMS	C2	1
2	Analysis of 2D frame.	P3	2
3	Analysis of 3D frame.	P3	2

8th SEMESTER

CT- 406 REPAIRS AND MAINTENANCE OF STRUCTURES

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Introduction to different types of failures in building structures and their causes	C2	1
2	Assessment of damage by different methods including non-destructive methods.	C4	4
3	Introduction to Rules and Regulations of Maintenance.	C2	1
4	Repair and Maintenance Measures.	C3	2

CT- 407 PAVEMENT AND FOUNDATIONS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To design different types of the pavements taking in to account the loading, materials characteristics and future maintenance and rehabilitation methods.	C6	3
2	Introduction to foundations types, their design and design of various piles.	C3	3
3	Introduction to bearing capacity, tests used to measure bearing capacity and prevention of settlement.	C4	1

CT- 407L PAVEMENT AND FOUNDATIONS

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To find the bearing capacity of soil using SPT and CPT	C3	4
2	Find the settlement of soil using plate load test.	C3	4

CT-408 PRE-STRESSED AND PRE-CAST CONCRETE TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Introduction to pre-stressing and merits and demerits of Pre-stressing system.	C2	1
2	Analysis and design of pre-stressed concrete members for flexure, shear bond and bearings.	C4	3
3	Types of pre-cast unit i.e: single tee, double tee and hollow sections.	C2	1
4	Introduction and use of design aids and load tables.	C2	1

CT-408L PRE-STRESSED AND PRE-CAST CONCRETE TECHNOLOGY

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	Study of equipment and machinery for pre-stressed and precast concrete industry.	C2	1
2	Casting and testing of specimens of precast RC concrete units.	P3	5
3	Casting and testing of specimens of pre-stressed concrete units.	P3	5

CT-409 PROJECT

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To solve a complex engineering technology problem.	C3	3
2	To carry out literature review.	C3	12
3	To prepare a plan to manage engineering project.	C3	11
4	To select and apply appropriate tool/computer model to solve a problem.	C5	5
5	To prepare comprehensive technical report for a complex engineering technology problem.	C3	10
6	To apply the concept of collaboration with team members to achieve a common goal.	C3	9
7	To defend his research project proposal and methodology with presentable output.	A4	10

CT-410 PRACTICAL FIELD TRAINING AND REPORT SUBMISSION - IV

Sr. No.	CLO	Bloom's Taxonomy Level	PLO
1	To prepare a plan to manage engineering project	C3	11
2	To apply the concept of collaboration with team members to achieve a common goal	C3	9
3	To defend his practical training with presentable output	A4	10