Effective from Session: 2012							
Course Code	**DCE -501**	**Title of the Course**	**DESIGN OF REINFORCED CONCRETE STRUCTURE – I**	**L**	**T**	**P**	**C**
Year	III	**Semester**	V				
Pre-Requisite	DCE -501	**Co-requisite**	NA				
Course Objectives	To impart knowledge and abilities to students to understand basic design philosophy and design of different elements of structure						

Course Outcomes	
CO1	Explain the basic concepts of structural design Methods of RCC to the practical problem
CO2	Know the concepts of Pre-stressed concrete
CO3	Use the Knowledge in structural planning and design of various component of buildings
CO4	Explain and design of Slabs & lintel

Unit No.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
1	**Introduction**	Concept of reinforced concrete structures, advantages and disadvantages. Different materials used in RCC with their properties. Load and loading standard as per IS: 875 Concept of design of reinforced concrete based on working stresses method and limit state method and their difference. Design based on Working Stress Method: Assumptions in the theory of simple bending for RCC beams. Flexural strength of a singly reinforced RCC beam. Position of the Neutral Axis. Resisting moment of the section, critical neutral axis, and actual neutral axis, concept of balanced, under reinforced and over-reinforced sections.	10	CO-1
2	**Shear strength**	Permissible shear stresses as per IS: 456.Development of stresses in reinforcement, development length and anchoring of bars. Bond Strength: Concept of bond, local and average, permissible bond stresses for plain and deformed bars as per IS, minimum length of embedment of bars, minimum splice length, actual bond stress in RCC beams and slabs, bond length as per IS: 456.Design of Lintel. Design of a Cantilever Beam and Slab	08	CO-2
3	**Design of concrete reinforced beams**	Design of singly reinforced beams as per IS: 456 from the given data such as span load and properties of material used. Design of Doubly Reinforced Concrete Beams:(i) Doubly reinforced concrete beam and its necessity. (ii) Strength of a double reinforced concrete beam section. (iii) Method of design: Simple problems only. (iv) Reinforcement details of doubly reinforced concrete beam.	08	CO-3
4	**Design based on limit state method**	[A] Fundamentals of Limit State Method:**(i)** Theory of limit state method. **(ii)** Partial safety factors. **(iii)** Flexural strength. **(iv)** Shear strength. **(v)** Development length of bars. **[B]** Design of the following: **(i)** singly reinforced rectangular beam. **(ii)** One way slab (simply supported.)	07	CO-4
5	**Pre – stressed concrete**	**(i)** Concept of pre-stressing. **(ii)** Situations where pre-stressed concrete is used. **(iii)** Materials used in pre-stressed concrete and their specifications as per IS. **(iv)** Post-tensioning and pre-tensioning. **(v)** Systems of pre-stressing. **(vi)** Freyssinet, Magnol-Blaten and Lee-Mecall **(vii)** Sketch showing Pre-stressing arrangement for RCC beam (No numerical problems be asked in the examination.)	07	CO-5

References Books:

1. Reinforced cement concrete: AK Jain.
2. Reinforced cement concrete: Sushil Kumar

e-Learning Source:

http://sdnbvc.digimat.in/nptel/courses/video/105105105/L06.html

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO1		3	2					3	2		2
CO2			2					3	3	2	
CO3		3	2					3	3		1
CO4		3	2					3	2	2	2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Effective from Session: 2012							
Course Code	**DCE-502**	**Title of the Course**	**TRANSPORTATION ENGINEERING-I**	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**03**	**01**	**00**	
Pre-Requisite	**DCE-502**	**Co-requisite**	NA				
Course Objectives	1.Transportation engineering aims to ensure that people and goods move safely and efficiently around the world. 2. Transportation engineers research, assess, design, and develop new solutions for transportation systems.						

Course Outcomes	
CO1	Exhibit the knowledge of planning, design and the fundamental properties of highway materials.
CO2	Acquire the knowledge of geometric design.
CO3	Understand and use the concept of different methods in design, construction, in section and maintenance.
CO4	Understand the different substructures and super-structures of a bridge and its construction.
CO5	Understanding the design and construction details of hill roads, causes and control of landslides, the necessity and types of road drainage systems, and gaining knowledge on airport and tunnel construction.

UnitNo.	Title of the Unit		Contact Hrs.	Mapped CO
Unit-I	**Introduction**	**(i)** Importance of Highway transportation. **(ii)** Functions of IRC. **(iii)** IRC classification of roads. **(iv)** Organization of state highways department. Road Geometrics: Glossary of terms used in geometrics and their importance: Right of way, Formation width, Road margin, Road Shoulder, Carriage way, Side slopes, Kerbs, formation levels, Camber and Gradient. **(i)** Design and average running speed, Stopping and passing sight distances. **(ii)** Curves necessity, Horizontal and Vertical curves including Transition curves and Super elevation, Methods of providing Super elevation. **(iii)** Use of IRC design tables and specifications for finding elements of Road geometrics. Drawing of typical cross sections in cutting and filling on straight and at a curve. **(iv)** Under pass & over pass (fly overs and bridges).	8	CO1
Unit-II	**Highway Surveys Plans and Road Materials**	Designation of a topographic map. Reading the data given on a topographic map. **(ii)** Basic considerations governing alignment for a road in plain and hilly area**. (iii)** Highway location. Marking of alignment. Importance of various stages viz: **(a)** Reconnaissance survey: Conduct reconnaissance and prepare reconnaissance report. **(b)** Preliminary survey: Object, organizing, conducting and information to be collected. **(c)** Location survey. **(d)** Standards for preparing the highway plans as per Ministry of Transport. Road Materials: **(i)** Different types of road materials in use: Soil, Aggregates Binders. **(ii)** Function of soil as Highway sub grade. **(iii)** C.B.R: Method of finding. CBR value and its significance. **(iv)**Testing aggregates: Abrasion test, Impact test, Crushing Strength test, Water Absorption test and Soundness test. **(v)** Aggregates: Availability of road aggregates in India, Requirements of road aggregates as per IS Specifications. **(vi)** Binders: Common binders: Cement, Bitumen and Tar, Properties as per IS specifications, penetration and Viscosity test, procedures and significance. Cut back and emulsion and their uses in the base course: Methods of construction as per Ministry of Shipping and transport (Government of India). **(vii)** In the base Surfacing**:(a)** Surface dressing. **(b)** (i) Premix carpet. (ii) Semi dense carpet (S.D.C) **(c)** Asphalt concrete. **(d)** Grouting. Maintenance of Track: NOTE: The study of the subject must be supplemented by a visit to a nearby railway station.	9	CO2
Unit-III	**Road Pavements**	Types and Their Construction**: i)** Road pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, Functions of various components. **(ii)** Sub-grade preparation - Setting out Alignment of road, setting out Benchmarks, control pegs for Embankment and cutting, borrow pits, making profiles of Embankment, Construction of Embankment, Compaction, Stabilization, and Preparation of sub grade. Methods of checking camber, Gradient and Alignment as per recommendations of IRC, Equipment used for sub grade preparation. **(iii)**Flexible pavements: Subbase necessity and purpose. Purpose of Stabilization. Types of Stabilization: **(a)** Mechanical stabilization. **(b)** Lime stabilization. **(c)** Cement stabilization. **(d)** Fly ash stabilization. **(e)** Granular subbase. **(iv)** Base course: **(a)** Brick soling. **(b)** Stone soling. **(c)** Metalling: water bound macadam and bituminous macadam. **(v)** Methods of constructions as per Ministry of Surface and Transport, Government of India, specifications and quality control; equipment**(vi)** Rigid pavements: Construction of concrete roads as per IRC Specifications, Form laying, Mixing and placing the concrete, Compacting and finishing, Curing, joints in concrete pavement, Equipment used.	8	CO3
Unit-IV	**Hill Roads and Road Drainage**	**i)** Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cut and partly in fill. **(ii)** Landslides: Causes, preventions and control measures. Road Drainage: **(i)** Necessity of road drainage work, Cross drainage works. **(ii)** Surface and subsurface drains and storm water drains. Location, spacing and typical details of side drains, side ditches for surface drainage. Intercepting drains, Pipe drains in hill roads, Details of drains in cutting embankment, typical cross-sections. Airport: Basic Element, Runway and Taxi Way. Tunnel: Introduction, Classification and Construction Method.	8	CO4

UNIT-V	**Road Maintenance**	Road Maintenance and Arboriculture: **(i)** Common types of road failures-their causes and Remedies such as baggy action. **(ii)** Maintenance of bituminous roads such as patch work and resurfacing. Maintenance of concrete roads-filling cracks, repairing joints, maintenance of shoulders (berms), maintenance of traffic control devices. Construction Equipment: Output and use of the following plant and equipment's: (i) Hot Mix Plant & Mix all battery. (ii) Tipper, Tractors (wheel and crawler) Scraper, Bulldozer, Dumpers, Shovels, Grader, Roller, Dragline. (iii) Asphalt mixer and tar boilers. (iv) Road pavers. Arboriculture: Names of trees used in arboriculture, distance of trees from center of roads and distance between center to center of trees, Tree guards, maintenance and revenue from trees. **(i)** Traffic studies, Methods of collection and Presentation of volume count data. **(ii)** Traffic control devices - Signs, markings and signals, their effectiveness and location, installation of signs, IRC standards. **(iii)** Segregation of traffic. **(iv)** Types of intersections and choice of each. **(v)** Accidents: Types, causes and remedies.	7	CO5

References Books:

1. Transportation Engineering: Khanna & Justo
2. Highway Engineering: A.K. Jain

e-Learning Source:

1. https://www.youtube.com/watch?v=xOi453bW-5Y

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	3					2				
CO2	3	2	2	3					2				2
CO3	2	3	2	1					1			3	
CO4	3	2	2	2					2				
CO5	3		2	2								2	2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Effective from Session: 2012							
Course Code	DCE-503	**Title of the Course**	ENVIRONMENTAL POLLUTION & CONTROL	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	
Pre-Requisite	DCE-503	**Co-requisite**	NA				
Course Objectives	The course objective of "Ecology of Environment" is to provide a comprehensive understanding of the interrelationships between living and non-living components of ecosystems, the impacts of various types of pollution on ecological balance, and strategies for pollution control, waste management, and environmental protection within the framework of relevant legislative acts.						

Course Outcomes	
CO1	To impart students with strong knowledge base through theory courses and sessional that makes them suitable for industries, academics, research and consultancies.
CO2	To develop students' analytical, computational and research skills through assignments.
CO3	To train the students in developing practical, efficient and cost-effective solutions to problems and challenges in environmental sciences and engineering.
CO4	To inculcate among students' sensitivity towards social and corporate responsibilities.

UnitNo.	Title of the Unit		Contact Hrs.	Mapped CO
UNIT-I	**ECOLOGY OF ENVIRONMENT**	Elements of the environment: Earth, water, air, space and energy. Ecology: Living and non-living concepts lead to ecology. Ecosystem: Terrestrial, aquatic and marine effects of environmental pollution on ecological balances. Pollution and its Classification: Definition, Classification, Air, Water, Solid waste, Thermal, Noise and Radioactive Pollution. Different parameters of pollution.	6	CO-3
UNIT-II	**WATER POLLUTION**	Sources, Transport of Pollutants, Effect of water pollutants on man, animal, plant and material, various types of pollutants. Mainly discuss various types of waste from the community, general characteristics of domestic & industrial wastes and their effects on environment, disposal methods on land and water, criteria of disposal by dilution. Stream sanitation. Sampling and monitoring instrumentation for water pollution and control.	7	CO-1,4
UNIT-III	**AIR POLLUTION**	Sources, Types of air pollutants, Transport of air pollutants, dispersion by single and multiple sources. Control equipment, filter, electrostatic precipitators, and wet scrubbers, fume combustion by incineration, Air pollution control in new and old plants. Solid Waste Pollution: Review of various types of solid waste, sources, and components of solid waste, city garbage and industrial solid waste handling and disposal equipment. Method of disposal, salvage and recovery, Volume reduction in solid waste.	7	CO-1
UNIT-IV	**NOISE POLLUTION**	Sources, measurement of pollution. Degree of noise, Echoes and their control. Industrial noise, unit characteristics occupational injuries due to noise, criteria and standard for occupational injuries due to noise. Means to control noise in industry. Radioactive Pollution: Sources and effect on humans, animals, plants and materials, measurement, means to control, preventive measures.	7	CO-4
UNIT-V	**THERMAL POLLUTION**	Various pollutants. Effects on the environment, preventive measures. Legislation: Preliminary knowledge of the following Acts and rules made there under: - (i)The Water (Prevention and Control of Pollution) Act - 1974. – (ii) The Air (Prevention and Control of Pollution) Act - 1981. (iii) The Environmental Protection (Prevention and Control of Pollution) Act -1986. (iv) Rules notified under EP Act 1986 Viz. (v)The Manufacture, Storage and Import of Hazardous Chemical (Amendment) Rules, 2000. (vi) The Hazardous Wastes (Management and Handling) Amendment Rules, 2003. (vii) Bio-Medical Waste (Management and Handling) (Amendment) Rules, 2003. (viii)The Noise Pollution (Regulation and Control) (Amendment) Rules, 2002. (ix) Municipal Solid Wastes (Management and Handling) Rules, 2000. (x) Recycled Plastics Manufacture.	13	CO-2,3

References Books:

1. Environmental studies Dr. S.K. Dhameja
2. Environmental pollution & control: P. Aarne Vesilind

e-Learning Source:

1. https://www.youtube.com/watch?v=e0n1l8uBt9w&list=PL1xA-pZWMKpPonDj5nGYM43IJc3Bslp0b

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3
CO1	1	3	1	3		3	1	1	1	1	3			
CO2	1	2	1	3		3	1	1	1	1	3	1		2
CO3	1	2	1	3		3	1	1	1	1	2		2	
CO4	3	3	1	3		3	1	1	2	1	3	2		3

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Effective from Session: 2012							
Course Code	**DCE-504**	**Title of the Course**	**IRRIGATION ENGINEERING**	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**03**	**01**	**00**	
Pre-Requisite	**DCE-504**	**Co-requisite**	NA				
Course Objectives	Irrigation engineering aims to maximize crop yield and quality by providing water to crops at the right time and in the right quantity.						

Course Outcomes	
CO1	Apply the knowledge of irrigation engineering to determine crop water requirement
CO2	Explain the dams, reservoir and barrage and their utilities.
CO3	Describe canal regulation work, cross drainage work, problems of water logging and their prevention.
CO4	Understanding the functions, necessity, and design aspects of hydraulic structures like aqueducts, siphons, super passages, level crossings, inlets, outlets, and dams (earthen, masonry, and concrete), including their construction, causes of failure, and spillway design.
CO5	Gaining knowledge on the causes, effects, detection, prevention, and remedies of drainage issues, understanding surface and sub-surface drainage systems. Exploring major irrigation projects in India, and learning the aim, methods, and advantages of groundwater recharge, with practical

Unit No.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
1	Introduction	Definition of irrigation. Necessity of irrigation. History of development of irrigation in India. Types of irrigation Sources of irrigation water. Rain Fall & Run – Off: Definition of rainfall & run-off, catchments area, Dicken's & Ryve's formulae. Types of rain gauges – Automatic & Non - Automatic Stream gauging. Water Requirement of Crops: Definition of crop season Duty, Delta and Base Period, their Relationship Gross command area, culturable command area Intensity of Irrigation, Irrigable area Water requirement of different crops- Kharif and Rabi	8	CO1
2	Lift Irrigation	Types of Wells, shallow & deep well, aquifer types, ground water flow, construction of open wells and tube wells. Yield of an open/tube well and problems Methods of lifting water - manual and mechanical devices, use of windmills. Flow Irrigation: Irrigation canals, Perennial Irrigation, Different Parts of irrigation canals and their functions. Sketches of different canal cross-sections. Classification of canals according to their Alignment. Design of irrigation canals - Chezy's formula, Mannings formula, Kennedy's and Lacey's silt theories and equations, comparison of above two silt theory's, equations, critical velocity ratio. Use of Garrets and Lacey's charts. Various types of canal lining - Advantages & disadvantages	8	CO2
3	Canal Head Works	Canal Head Works and Regulatory Works: Definition, object, general layout, functions of different parts. Difference between Weir and Barrage Regulatory Works: Functions and explanation of terms used. Cross and Head regulators. Falls. Energy dissipaters. Outlets-Different types. Escapes.	8	CO3
4	Cross Drainage Works	Functions and necessity of the following types: Aqueduct, Syphon, Super passage, Level crossing, inlet and outlet. Constructional details of the above Dams: Earthen dams-types, causes of failure Classification into masonry & concrete dams, Labeled cross-section of gravity dam. Spillway.	8	CO4
5	Water Logging and Drainage	Definition causes and effects, detection, prevention and remedies. Surface and sub-surface drains and their layout. Major Irrigation Projects in India Practice: Visits to at least one of the Irrigation Projects and write specific report about the same. Ground Water Recharge: Aim, Method and Advantage.	8	CO5

References Books:

1. Irrigation Engg : B.C. Punamia
2. Irrigation Engg: Sushil Kumar

e-Learning Source:

1. https://www.youtube.com/watch?v=ONlgYeiw1U4

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2		2	1		2		2			3			
CO2	2	2	2		2			2			1		2	
CO3	2	3	2		2	2		2			3	1		
CO4	2													
CO5	2		2								2		2	

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Effective from Session: 2012							
Course Code	DCE-505	**Title of the Course**	Surveying-II	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**03**	**01**	**00**	
Pre-Requisite	DCE-505	**Co-requisite**	NA				
Course Objectives	Students should be able to know about the advance survey equipment & set out circular curve in the field.						

Course Outcomes	
CO1	Handle various survey instruments for a particular survey work.
CO2	Carryout various civil engineering survey works.
CO3	Collect and analyze survey data for preparing drawings and maps.
CO4	Apply checks for errors elimination and Carry-out survey work using theodolite and total station.
CO5	Perform setting of horizontal curves on field.

Unit No	Title of the Unit		Contact Hrs	Mapped CO
Unit-I	**PLANE TABLE SURVEYING**	**Plane Table surveying:(i)** Purpose of plane table surveying. Equipment used in plane table survey (a)Plane table, (b)Alidade (Plain and Telescopic),(c) accessories.**(ii)** Method of plane tabling (a) centering (b) leveling (c) Orientation. **(iii)** Methods of plane table surveying (a) Radiation, (b) Intersection, (c) Traversing (d) Resection. **(iv)**Two-point problem. **(v)** Three-point problem by (a) Mechanical Method (Tracing paper) (b) Bessel's Graphical Method. (c) Trial and error method. Errors in plane table survey and precautions to control them. Testing and adjustment of plane table and alidade.	8	CO-1, CO-3
Unit-II	**CONTOURING**	**Contouring**: concept of contour, Purpose of contouring, Contour interval and horizontal equivalent, Factors affecting contour interval, characteristics of contour, Methods of contouring direct and indirect, use of stadia measurements in contour survey. Interpolation of contours; Use of contour map, Drawing cross section from a contour map, Marking alignment of a road, railway and a canal on a contour map, Computation of earthwork and reservoir capacity from a contour map.	8	CO-3, CO-2
Unit-III	**THEODOLITE SURVEYING**	**Theodolite Surveying:** Working of a transit Vernier theodolite, Fundamental axes of a theodolite and their relation, Temporary adjustments of a transit theodolite, least count and concept of transiting, swinging, face left, face right and changing face, Measurement of horizontal and vertical angles. Prolonging a line (forward and backward) Measurement of bearing of a line, traversing by included angles and deflection angle method, traversing by stadia measurement, Theodolite triangulation and plotting a traverse, concept of coordinate and solution of omitted measurements (one side affected), Errors in theodolite survey and precautions taken to minimize them, Limits of precision in theodolite traversing. Principle and working of a micro-optic theodolite. Brief introduction to tachometry	8	CO-4, CO-1,
Unit-IV	**TOTAL STATION & AUTO LEVEL**	**Total Station & Auto Level:** Working and application of total station and auto level. **Curves:** Simple circular curves:**(i)** Need and definition of a simple circular curve; Elements of simple circular curve, Degree of the curve, radius of the curve, tangent length, point of intersection (Apex point), tangent point, length of curve, long chord, deflection angle, apex distance and mid-ordinate.	6	CO-5, CO-2
Unit-V	**CURVES**	**Setting out of simple circular curve:(a)** By linear measurements only(i) Offsets from the tangents. (ii) Successive bisection of arcs. (iii)Offsets from the chord produced. **(b)**By Tangential angles using a theodolite. **(ii)**Transition Curves: Need (centrifugal force and super elevation) and definition of transition curve, requirements of transition curves; length of transition curves for roads by cubic parabola; calculation of offsets for a transition curve; setting out of a transition curve by tangential offsets only. **(iii)** Vertical curves Setting out of a vertical curve.	10	CO-5

References Books:

1. Surveying Engg : B.C. Punmia, Vol-1 &Vol-2
2. Surveying Engg: S.K. Duggal ,Vol-1

e-Learning Source:

1. https://www.youtube.com/watch?v=8IiBetSgAOs&list=PLCYhGkOwO39hIDG9dA3YtXe5dftVGL7po

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	2	2	1	2	2			1	3	
CO2	3	3	2	1	2	1	2	1	1		1		2
CO3	2	3	2	1	2	2	2	1	2		1		1
CO4	2	1	2	3	2	2	1				2	3	
CO5	3	3	3	2	2	1	3				2	2	

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	Sign & Seal of HoD

Effective from Session: 2012							
Course Code	DCE-506	**Title of the Course**	CONSTRUCTION MANAGEMENT & ACCOUNTS- I	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**3**	**1**	**0**	**-**
Pre-Requisite	DCE-506	**Co-requisite**	NA				
Course Objectives	To develop the knowledge of construction management techniques for project Management.						

Course Outcomes	
CO1	Ability to take responsibilities as construction manager.
CO2	Application of different acts for construction labour & organizing ability.
CO3	Knowledge of work measurement application in construction industry.
CO4	Study the concepts of accident and safety in construction.
CO5	To study about road material used.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
UNIT - I	**Introduction**	(i) Classification of construction into light, heavy and industrial construction. (ii)The construction team: Owner, Engineer and Contractors, their functions and interrelationship. (iii) Resources for construction industry: Men, Machines, Materials, Money and Management. (iv) Main objectives of Civil engineering management. (v) Functions of construction management, planning, organizing, staffing, and directing, controlling and coordinating, meaning of each of these with respect to a construction job. Construction Planning: (i) Stages at which planning is done. Pretender and contract planning by the contractor. (ii) Scheduling: Definition, Methods of scheduling: Bar charts and CPM, advantages of scheduling. No problem on CPM to be set in the examination. (iii) Planning and scheduling of construction jobs by bar charts. (iv) Preparation of construction schedule, labour schedule, material schedule, and equipment schedule. (v) Limitations of bar charts. (vi) Cost - time balancing.	8	CO-1
UNIT - II	**Organizations**	(i) Types of organization: Line, staff, functional and their characteristics. (ii) Principles of organization (only meanings of the following and their significance), Span of control, Delegation of authority and responsibility, Ultimate authority and responsibility, Unity of command, contact, unity of assignment, job definition, increasing organization relationship. (iii) Motivation and human relationship concept, need and fundamentals. Site Organization: (i) Factors influencing, job layout from site plan. (ii) Principle of storing and stacking materials at site. (iii) Location of equipment. (iv) Preparation of actual job layout for a building. (v) Organizing labour at site. Construction Labour: (i) Conditions of construction workers in India, wages paid to workers. (ii) Trade unions connected with construction industry and trade Union Act. (iii) Labour welfare. (iv) Payment of wages Act. Minimum wages Act. (v) Workmen compensation Act. (vi) Contract Labour Act. Inspection and Quality Control: (i) Principles of inspection. (ii) Major items in construction job requiring quality control. Control of Progress: (i) Methods of recording progress. (ii) Analysis of progress. (iii) Taking corrective actions keeping head of office informed.	8	CO-2
UNIT - III	**Accidents and Safety in Construction and Accounts**	(i) Accidents - causes. (ii) Safety measures for: (a) Excavation work: (b) Drilling and blasting. (c) Hot bituminous works. (d) Scaffolding, ladders, forms work. (e) Demolitions. (iii) Safety campaign. **ACCOUNTS** Introduction: (i) Necessity of account. (ii) List of reference book on accounts: (a) Civil Services Rules, Vol I, II and III (b) PWD Accounts codes. (c) Manual of orders. (d) Departmental financial rules. (e) State Treasury rules. Organization: (i) Establishments in the PWD. (ii) Regular establishment:(a) Permanent establishment. (b) Temporary establishment. (iii) Work charged establishment. (iv) Contingency establishment. Outline of P.W.D. System of Accounts: (i) Necessity of a system of accounts. (ii) P.W.D. system of accounts. (iii) Classification of transactions: (a) Necessity of maintaining the accounts by Head of Accounts: (b) Heads of Account: (i) Major Heads. (ii) Minor Heads. (iii) Detailed Heads. (Detailed Heads of Accounts not to be memorized).	8	CO-3
UNIT -IV	**Cash and Stores**	(i) Definition of cash. (ii) Precautions in custody of cash. (iii) Treasury challan - procedure to fill the prescribed form. (iv) Imprest account and temporary advance. (v) Definition of imprest and rules for maintaining imprest account. Actual filling of the prescribed form. (vi) Definition of temporary advance, Its difference from the imprest account, maintenance of temporary advance account. **Stores:** (i) What are stores, their necessity and safe custody? (ii) Classification of Stores: (a) Stores debatable to suspense heads-stock. (b) Stores debatable to final heads: Tools and plant. Road metal Material charged direct to works.	8	CO-4
UNIT -V	**Road Metal**	(a) Meaning. (b) Rules for maintaining road metal returns filling up the prescribed form. (c) Method of checking. (d) Shortages and surpluses. Materials charged direct to works: Necessity, circumstance under which materials are directly charged to work. (a) Material at site Accounts (M.A.S), Rules for actual filling of prescribed form i.e. - Detailed statement of materials compared with estimated requirements and - Report of the value and verification of unused materials. (b) Disposal of surplus materials at the work site. (c) Definition of Issue rate, Storage rate, Storage charges, Supervision charges - Assets and liabilities. Issue of materials to contractors.	8	CO-5

References Books:

1. Construction Management and Accounts by V. N. Vazirani

e-Learning Source:

1. https://youtu.be/pwv1Nu3TO4A?si=Gfw0xaErtDbdzMyi

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1							1	3	2		3		
CO2							1	3	2		1		
CO3							1	3	2		2		
CO4							2	2	1		3		
CO5							3	3	2		1		

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Effective from Session: 2012							
Course Code	DCE-554	**Title of the Course**	CIVIL ENGG. DRAWING – II LAB	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**0**	**0**	**3**	
Pre-Requisite	DCE-554	**Co-requisite**	NA				
Course objectives	To impart the experimental knowledge of labeled sketches of different Civil Engineering components.						

Course Outcomes	
CO1	Prepare the labeled sketch of different building components on sheets
CO2	Interpret and execute the labeled sketch of different building components on sheets with exposure to CAD
CO3	Prepare the sketch of front elevation and sectional elevation from a given plan.
CO4	Prepare the sketch of plan, front elevation and sectional elevation from line diagram.
CO5	Prepare the labeled sketch of different Civil Engineering components on sheets

Unit No.	Title of the Unit		Contact Hrs.	MappedCO
1	**Experiment No-1**	Preparation of a working drawing (elevation, plan, details of joints at ridge, eaves and other connections) for a riveted steel roof truss resting on a masonry wall for the given span, shape of the truss and the design data regarding the size of the members and the connections. Also calculate the quantity of steel for the truss.	3	CO-1
2	**Experiment No-2**	Tubular Steel Roof Trusses: Types of trusses for different spans. Details of column - truss connection. Simple trusses using tubular sections, North light provision.	3	CO-1
3	**Experiment No-3**	Steel connections (a, b, c, d) riveted and (e) welded all unstiffened. (a) Beam to beam connections (seated and framed) (b) Beam to column (seated and framed) (c) Column base connections (slab base & gusseted base)	3	CO-1
4	**Experiment No-4**	R.C.C. STRUCTURES (On Computer by Auto Cad) (a.) PUBLIC BUILDING: Plan elevation & sections of a public building like School. Hospital, Canteen, Community Hall, guest house. At least double storied showing details of following RCC elements:(i) R.C.C. beam singly reinforced and doubly reinforced giving the size and number of bars, stirrups their size and Spacing. (ii) Details of reinforcement for a RCC square and circular column with isolated square footing. (iii) Details of reinforcement for a cantilever beam with given data regarding the size of the beam and the reinforcement, Anchorage of reinforcement.	3	CO-2
5	**Experiment No-5**	Details of reinforcement in plan and section for a simply supported RCC. One way slab with intermediate support and two-way slab. Bar bending schedule should be prepared. Details of reinforcement of a two storied internal and corner column. In this, the details of reinforcement at the junction with beams must be shown.	3	CO-3
6	**Experiment No-6**	Details of reinforcement of the junction of a secondary beam with the main beam with the given data & Sectional details of T-beam showing details of bars.	3	CO-3
7	**Experiment No-7**	Details of reinforcement for a cantilever retaining wall with the given design data regarding the reinforcement, size and shape of the wall & a simple circular overhead water tank.	3	CO-4
8	**Experiment No-8**	Typical sections of a channel. Typical Cross-section of an unlined and lined channel in cutting, partly cutting and fully in filling. & Typical L-section of a distributary.	3	CO-4
9	**Experiment No-9**	Plan and cross-section of tube well with pump house.	3	CO-5
10	**Experiment No-10**	Plan, cross-section and L-section of a distributary fall with details of wing wall, pitching, flooring and tube well.	3	CO-5

References Books:

1. Lab manual of University Polytechnic Civil Department

e-Learning Source:

1. https://youtu.be/gp3oKSEnEFM?si=FnrxVroMzawYB3r7

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1		PSO2
CO1			3			2			2			1		3
CO2			3			1			2			3		2
CO3			3			2			3			1		1
CO4			3			2			2			2		3
CO5			3			1				3				

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	Sign & Seal of HoD

Effective from Session: 2012							
Course Code	**DCE -555**	**Title of the Course**	**SURVEYIBG – II**	**L**	**T**	**P**	**C**
Year	III	**Semester**	V	**0**	**0**	**03**	
Pre-Requisite	**DCE -555**	**Co-requisite**	NA				
Course Objectives	To impart knowledge and abilities to students to understand basic design philosophy and design of different elements of structure						

Course Outcomes	
CO1	Know about the working of plane table
CO2	Prepare the contour map
CO3	Find the difference of level between the points
CO4	Record and observing necessary observations with the survey instruments.

Unit No.	**Title of the Unit**		**Contact Hrs.**	**Mapped CO**
1	Experiment -1	Setting of the plane table: (a) Marking the North direction. (b) Plotting a few points by radiation method	09	CO-1
2	Experiment- 2	Orientation of the plane table by: (a) Trough compass (b) back sighting.	06	CO-1
3	Experiment -3	Plotting a few points by intersection method	06	CO-4
4	Experiment -4	Two-point problem	06	CO-2, CO-4
5	Experiment- 5	Three-point problem by: (a) Tracing paper method. (b) Bessel's graphical method. (c) Trial and error method.	09	CO-4
6	Experiment- 6	Contouring: Preparing a contour plan by radial line method by the use of a Tangent Clinometers Tachometer.	06	CO-2
7	Experiment -7	To find the difference of level between two distant points by taking staff readings on different stations from the single setting	06	CO-3
8	Experiment -8	To find the difference of level between two points by taking at least four change points.	06	CO-3

References Books:

1. Surveying Engg : B.C. Punmia
2. Surveying Engg : S.K. Duggal

e-Learning Source:

https://archive.nptel.ac.in/content/storage2/courses/105107122/modules/module10/lesson33.htm

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1		3	3	3				2	3		
CO2		3	3	2				2	3		
CO3		3	3	3				2	3		
CO4		3	3	3				2	3		

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**