

S. No.	Course Code	Course Name	Category	Type	Credit	L	T	P
1	CET-301	Sanitary Engineering	PC	Theory	3	3	0	0
2	CET-302	Structural Analysis-II	PC	Theory	4	3	1	0
3	CET-303	Design of RC Structure	PC	Theory	3	3	0	0
4	CET-304	Hydrology	PC	Theory	4	3	1	0
5	CET-305	Soil Mechanics	PC	Theory	4	3	1	0
6	CET-306	Estimating & Costing	PC	Theory	3	2	1	0
1	CEP-307	RC Design and Drawing	PC	Lab	1	0	0	2
2	CEP-308	Structural Analysis Lab	PC	Lab	1	0	0	2
3	CEP-309	Soil Mechanics lab	PC	Lab	1	0	0	2
Total Credits: 21+3=24								

UG	Department: Civil Engineering
Course Code: CET 301	Course Name: Sanitary Engineering
Credit: 3	L-T-P: 3-0-0
Version:	Approved on:
Pre-requisite course:	
<p>Syllabus</p> <p>Sewage disposal; Layout of Sewerage system; Characteristics of municipal wastewater; Basics of microbiology and biological oxidation.</p> <p>Wastewater Treatment: Treatment scheme; Screening; Grit removal; Sedimentation; Floatation; Activated sludge process; Extended aeration; Trickling filters; RBC, UASB; aerated lagoons; Septic tank; Sludge handling and disposal.</p> <p>Introduction to tertiary treatment. Recycle and reuse of treated sewage. Introduction to natural systems like Stabilization ponds, wetlands etc. Rural wastewater management including introduction to total sanitation campaign.</p> <p>Books</p> <ol style="list-style-type: none"> 1. Wastewater Treatment by Metcalf & Eddy, TMH. 2. Manual of Sewage treatment by CPHEEO, Ministry of Urban Dev., GOI 3. Environmental Engineering by Davis and Cornwell, McGraw Hill 4. Wastewater treatment for pollution control and reuse by Soli J. Arceivala and Shyam R. Asolekar, TMH. 	

UG	Department: Civil Engineering
Course Code: CET 302	Course Name: Structural Analysis -II
Credit: 4	L-T-P: 3-1-0
Version:	Approved on:
Pre-requisite course: Structural Analysis - I	
<p>Syllabus</p> <p>Degree of Kinematic indeterminacy and restrained structure; Displacement approach of analysis – Slope deflection method, Moment distribution method for analysis of continuous beams and rigid – jointed plane frame; Use of symmetry; Three hinged and two hinged arches; Matrix method using system approach – flexibility and stiffness method for analysis of pin-jointed plane frame, continuous beams and rigid – jointed plane frame; Introduction to Direct Stiffness method; Assembly of stiffness and load vectors; Boundary condition and solutions; Application to planer structures – trusses beams and frames & its computer formulations.</p> <p>Books</p> <ol style="list-style-type: none"> 1. Structural Analysis- A Matrix Approach by G.S. Pandit and S.P. Gupta 2. Structural Analysis by C.K. Wang 3. Basic Structural Analysis by Reddy 	

UG	Department: Civil Engineering
Course Code: CET 303	Course Name: Design of RC Structures
Credit: 3	L-T-P: 3-1-0
Pre-requisite course:	
<p>Syllabus</p> <p>Basic philosophy of Working Stress and Limit state Methods for Design of concrete structures; Design of beams; singly and doubly reinforced rectangular beams; Design of secondary & main beams, cantilevers, balconies and staircases (excluding spiral staircase); Design of slabs; one way slabs; two-way slabs with corners free to lift up and held down; design of continuous slab; T-beams subjected to flexure, shear & torsion and T-beam floors; Design of columns; axially loaded and eccentrically loaded columns; effect of small and large eccentricities; Design of footings; isolated and combined footings; Portal frames with fixed and hinged supports.</p> <p>(Note: Limit state method of design will be adopted except otherwise specially mentioned).</p> <p>Text Books</p> <ol style="list-style-type: none"> 1. RCC by Jain & Jaykrishna 2. Design of RCC Structures by Menon & Pillai 3. RCC by Sinha 	

UG	Department: Civil Engineering
Course Code: CET 304	Course Name: Hydrology
Credit: 4	L-T-P: 3-1-0
Version:	Approved on:
Pre-requisite course:	
<p>Syllabus</p> <p>Hydrological cycle and hydrologic budget; Elements of geomorphology; Precipitation; Measurement and analysis; Hydrology abstraction - interception, evaporation, infiltration; Rainfall–Runoff relationship; Stream flow; Hydrographs & applications; Frequency analysis; Regression and correlation analysis; Flood Routing, Groundwater, Hydraulics of groundwater.</p> <p>Text Books</p> <ol style="list-style-type: none"> 1. Applied Hydrology, Ven Tee Chow, D. R. Maidment and Larry W. Mays, Tata McGraw-Hill. 2. Engineering Hydrology, K. Subramana, Tata McGraw-Hill <p>Reference Books</p> <ol style="list-style-type: none"> 1. Handbook of Hydrology, Ven Tee Chow, D. R. Maidment and Larry W. Mays, Tata McGraw-Hill. 2. Hydrology for Engineers by Linsley, Kohler and Paulhus 	

UG	Department: Civil Engineering
Course Code: CET 305	Course Name: Soil Mechanics
Credit: 4	L-T-P: 3-1-0
Pre-requisite course: Basic Civil Engineering knowledge	
<p>Syllabus</p> <p>Introduction, Simple soil properties, Phase relations (weight volume relationships), index properties, classification of soils, soil structure and clay minerals. Principle of effective stress, Capillarity, permeability, Laboratory tests and Field pumping tests for permeability determination and seepage through soils: Two-dimensional flow; Flow nets and their characteristics; Uplift pressure, exit gradient, and piping; Criteria for filters, compressibility characteristics of Soils, compaction, compaction tests, field compaction methods and control, effect of compaction on soil properties, consolidation, Terzaghi's one-dimensional consolidation theory, consolidation test, computation of settlement, secondary consolidation, vertical sand drains, shearing strength of soils, Mohr-Coulomb failure criterion, Laboratory tests for shear strength determination, stress path concept, determination of pore pressure coefficients, Shear strength characteristics of clays and sands, Stress distribution, Boussinesq equations, Newmark's influence chart, Westergaard's analysis, Properties of rock materials, Point load strength index of rocks, Strength of rock materials in triaxial compression.</p> <p>Books</p> <ol style="list-style-type: none"> 1. T. William Lambe, Robert V. Whitman, "Soil Mechanics", John Wiley and Sons, New York. 2. John N. Cernica, "Geotechnical Engineering: Soil Mechanics", John Wiley and Sons, New York. 3. Rodrigo Salgado, "The Engineering of Foundations", Tata McGraw Hill Education Limited, New Delhi. 4. Leonard Obert and Wilbur I. Duvall, "Rock Mechanics and Design of Structures in Rock", John Wiley and Sons, Inc., New York. 5. Muni Budhu, "Soil Mechanics and Foundations", John Wiley and Sons, New York. 6. Alam Singh, "Modern Geotechnical Engineering", CBS Publishers and Distributors Pvt. Ltd. 7. Gopal Ranjan and A.S.R Rao, "Soil Mechanics and Foundation Engineering", New Age International Pvt. Ltd, Publishers, New Delhi. 8. V.N.S. Murthy, "Principles of Soil Mechanics and Foundation Engineering", UBS Publishers and Distributors, New Delhi. 9. Shamsheer Prakash and P.K. Jain, "Engineering Soil Testing", Nem Chand & Bros. Roorkee. 	

UG	Department: Civil Engineering
Course Code: CET 306	Course Name: Estimating and Costing
Credit:3	L-T-P:2-1-0
Version:	Approved on:
Pre-requisite course:	
<p>Syllabus</p> <p>Introduction: Drawings and specifications use in estimating, Role and qualities of an estimator, Process/flow of estimation, Units of measurement, and Types of estimates, Specifications, Introduction to estimating software, Estimate of Buildings and BOQ preparation: Methods, Earth work for buildings, Substructure work, super structure work, roofs, stairs, openings, arches, wall and floor finishes, RCC work, steel work, detailed estimate of a two storey building, Introduction to mechanical-electrical-plumbing work estimating, Estimate of Roads: Earthwork, Detailed estimate of bitumen and cc road,</p> <p>Material estimation and Analysis of rates: abstract of materials, material cost, labour cost, and equipment cost, contingencies, overhead and profit, Misc. Charges, Analysis of rates, Tender, Tender Notice, Earnest money, Security money, Contracts, Work measurement and Payment: Measurement book use, payment process and mode of payment, Valuation: valuation of building, Method of valuation.</p> <p>Text books</p> <ol style="list-style-type: none"> 1. Estimating and Costing in Civil Engineering by B. N. Dutta UBSPD publication <p>Reference Material</p> <ol style="list-style-type: none"> 1. Estimating in Building Construction by Frank R. Dagostino 	

UG	Department: Civil Engineering
Course Code: CEP 307	Course Name: RC Design and Drawing
Credit:2	L-T-P: 0-0-2
Version:	Approved on:
Pre-requisite course: Structural Analysis-I, Build. Tech. II	
<p>Syllabus</p> <p>Design of real field structures with detailed drawings of following structures; Singly and doubly reinforced beams, cantilevers, balconies, staircases, slabs, T-beam floors, columns, Beam column connections, isolated and combined footings and Portal frames.</p> <p>Text Books</p> <ol style="list-style-type: none"> 1. RCC by Jain & Jaykrishna 2. RCC by Krishnaraju 3. RCC by Sinha 	

UG/PG : UG	Department: Civil Engineering
Course Code: CEP 308	Course Name: Structural Analysis Laboratory
Credit: 1	L-T-P: 0-0-2
Version:	Approved on:
Pre-requisite course:	
<p>List of Experiments</p> <ol style="list-style-type: none"> 1. To verify the reactions in a simply supported beam. 2. To measure deflections under unsymmetrical bending condition. 3. To verify Hooke's law and find Modulus of elasticity of a given wire material from load deflection graph. 4. To verify the buckling loads for the given struts. 5. To verify the centrifugal force formula 6. To determine Brinell's Hardness Test. 7. To draw influence lines for horizontal thrust of three hinge arch. 8. To verify of reciprocal theorem. 9. To verify deflections in curved members. 10. To verify Muller's Breslau's principle and to measure carry over factor for a prismatic beam. 11. To perform Charpy's impact test. 12. To determine tensile strength of steel bar and compressive strength of concrete using universal testing machine. 13. To determine fatigue load. 14. To determine torsional properties of cylindrical specimen. <p>Reference : Lab Manuals</p>	

UG	Department: Civil Engineering
Course Code: CEP 309	Course Name: Soil Mechanics Laboratory
Credit: 1	L-T-P: 0-0-2
Pre-requisite course: Soil Mechanics	
<p>List of Experiments</p> <ol style="list-style-type: none"> 1. Water content determination 2. Specific gravity test 3. Sieve analysis 4. Hydrometer analysis 5. Atterberg limits determination 6. Permeability tests 7. Compaction test 8. Core-cutter and sand replacement methods for in-situ density determination. 9. Determination of density index or relative density of soils. 10. Determination shear strength parameters using Direct shear test. 11. Determination shear strength parameters using Unconfined compression 12. test. 13. Consolidation characteristics of soils using Consolido meter/ Odeo meter. <p>Books</p> <ol style="list-style-type: none"> 1. Shamsher Prakash and P.K. Jain, "Engineering Soil Testing", Nem Chand & Bros. 2. Roorkee. 3. Head, K.H, "Manual of Soil Laboratory Testing", John Wiley and Sons, New York. 4. T. William Lambe, "Soil Testing for Engineers", Wiley Eastern Limited, New Delhi. 5. Joseph E. Bowles, "Engineering Properties of Soil and their Measurement", McGraw Hill Inc., New York. 	