



### Scheme of Studies & Examinations

Department: Civil Engineering – 5<sup>th</sup> Semester

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of class work	Examination Marks		Total	Credit	Duration Of Exam
			L	T	P		Theory	practical			
1	CE 301 B	STRUCTURAL ANALYSIS - II	3	2	-	25	75	-	100	5	3
2	CE 303 B	HYDROLOGY	3	1	-	25	75	-	100	4	3
3	CE 305 B	REINFORCED CONCRETE DESIGN - I	3	2	-	25	75	-	100	5	3
4	CE 307 B	ENVIRONMENTAL ENGINEERING - I	3	1	-	25	75	-	100	4	3
5	CE 309 B	TRANSPORTATION ENGINEERING - I	3	1	-	25	75	-	100	4	3
6	CE 311 B	GEO-MECHANICS	3	1	-	25	75	-	100	4	3
7	CE 313 B	REINFORCED CONCRETE DESIGN – I LAB	-	-	2	20	-	30	50	1	3
8	CE 315 B	ENVIRONMENTAL ENGINEERING - I LAB	-	-	2	20	-	30	50	1	3
9	CE 317 B	TRANSPORTATION ENGINEERING - I LAB	-	-	2	20	-	30	50	1	3
10	CE 319 B	GEO-MECHANICS LAB	-	-	2	20	-	30	50	1	3
11	CE 321 B	SURVEY CAMP	-	-	2*	20	-	30	50	2	3
<b>Total</b>			18	8	10	250	450	150	850	32	

**Note:**

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of sports is given in General Proficiency Syllabus.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator are prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination
4. \* Assessment of survey camp held after fourth semester.



**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

Subject: Structural Analysis – II (Theory)

Subject Code: CSE-301B

**Detailed Content**

**Unit No.1 Analysis of Indeterminate Structures, Fixed and Continuous Beams**

- Topic No.1 : Degree of static and kinematic indeterminacies, analysis of indeterminate beams
- Topic No.2 : Pin jointed frames, rigid frames and trusses by method of consistent deformation
- Topic No.3 : Effect of lack of fitness, temperature, method of least work
- Topic No.4 : Induced reactions on statically indeterminate beams, pin jointed frames
- Topic No.5 : Rigid frames and trusses due to yielding of supports
- Topic No.6 : Analysis of fixed beams, continuous beams and propped cantilevers by moment-area theorem and strain energy method
- Topic No.7 : Fixed end moments due to different types of loadings
- Topic No.8 : Effects of sinking and rotation of supports, bending moment and shear force diagrams for fixed beams and propped cantilevers
- Topic No.9 : Slope and deflection of fixed beams, analysis of continuous beams by the three moment theorem (Clapeyron's theorem) due to different types of loadings.

**Unit No.2 Slope and Deflection Method, Moment Distribution Method**

- Topic No.10: Introduction, slope-deflection equations
- Topic No.11: Analysis of statically indeterminate beams and rigid frames (sway and non-sway type) due to applied loads and uneven support settlements.
- Topic No.12: Introduction, absolute and relative stiffness of members, stiffness and carry-over factors
- Topic No.13: Distribution factors, analysis of statically indeterminate beams and rigid frames (sway and non-sway type) due to applied loads and uneven support settlements
- Topic No.14: symmetrical beams and frames with symmetrical, skew-symmetrical and general loading

**Unit No.3 Kani's Method, Approximate Analysis of Frame**

- Topic No.15: Introduction, basic concept
- Topic No.16: Analysis of statically indeterminate beams and rigid frames (sway and non-sway type) due to applied loadings and yielding of supports
- Topic No.17: Symmetrical beams and frames
- Topic No.18: General case- storey columns unequal in height and bases fixed or hinged
- Topic No.19: Vertical and lateral load analysis of multistory frames
- Topic No.20: Portal frame method
- Topic No.21: Cantilever frame method
- Topic No.22: Substitute frame method and their comparison

**Unit No.4 Space Frames, Plastic analysis**

- Topic No.23: Introduction, simple space truss
- Topic No.24: Types of supports
- Topic No.25: Equilibrium and stability conditions
- Topic No.26: Analysis of determinate and indeterminate space frames using tension coefficient method
- Topic No.27: Basics of plastic analysis
- Topic No.28: Static theorems for plastic analysis of beams and frames
- Topic No.29: Kinematic theorems for plastic analysis of beams and frames

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	2	-	5	25	75	3 hours	100

**TEXT BOOKS:**



# PM

## COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India  
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

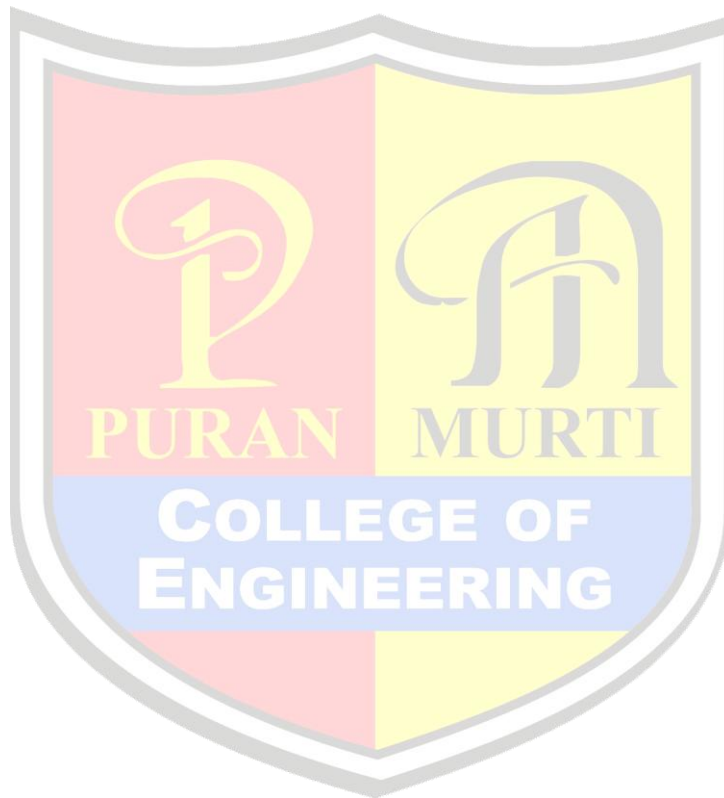
1. Basic structural analysis - C.S. Reddy
2. Structural Analysis- Thandvamoorthy TS Oxford University Press
3. Structural Analysis - Devdas Menon Narosa Publishing House

### REFERENCE BOOKS:

1. Indeterminate Structural Analysis C K Wang Tata McGraw Hill

### Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.





**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

**Subject: Hydrology (Theory)**

**Subject Code: CSE-303B**

**Detailed Content**

**Unit No.1 Precipitation, Abstractions From Precipitation**

- Topic No.1 : Hydrologic cycle and Water Budget, Scope and Applications
- Topic No.2 : Drainage basin and its characteristics. Precipitation - Types and Forms, Measurement by rain gauge and other methods
- Topic No.3 : Design of rain gauges station, Mean precipitation, Presentation of rainfall data
- Topic No.4 : Estimation of missing rainfall data. Test for consistency of record
- Topic No.5 : Analysis of rainfall data, Intensity-depth-area relationship
- Topic No.6 : Duration-Frequency curves, Depth-Area-Duration curves, Frequency analysis of rainfall data
- Topic No.7 : Evaporation and Transpiration, Factors affecting evaporation, Measurement by different methods
- Topic No.8 : Infiltration, Factors affecting infiltration, Infiltration measurement
- Topic No.9 : Infiltration capacity curve, Infiltration indices

**Unit No.2 Run Off, Hydrographs**

- Topic No.10: Factors affecting run off, Estimation of run off by various methods
- Topic No.11: Rainfall-runoff correlations, Flow Duration Curve, Mass Flow Curve
- Topic No.12: Components, Base flow separation, S-Curve Hydrograph
- Topic No.13: Derivation of Unit Hydrograph and its applications & limitations, Synthetic and Instantaneous Unit Hydrograph
- Topic No.14: Dimensionless Unit Hydrograph, CWC method for Indian Catchments

**Unit No.3 Reservoir Planning**

- Topic No.15: Types of reservoir, Flood Routing through reservoir
- Topic No.16: Storage zones, Selection of reservoir site
- Topic No.17: Mass curve analysis for reservoir capacity
- Topic No.18: Reservoir yield and its determination for a given reservoir capacity
- Topic No.19: Reservoir sedimentation and its control, Control of erosion in catchment areas
- Topic No.20: Watershed management and Rain water harvesting

**Unit No.4 Floods**

- Topic No.21: Floods, Methods of flood control Cantilever frame method
- Topic No.22: Flood Routing through channels. Estimation of flood by Envelope Curves
- Topic No.23: Empirical Formulae and Rational Method
- Topic No.24: Application of Unit Hydrograph. Flood frequency analysis
- Topic No.25: Probability plotting, Gumbel's distribution
- Topic No.26: Selection of a design return period.

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
Max. Marks	Max. Marks	Exam Duration					
3	1	-	4	25	75	3 hours	100

**TEXT BOOKS:**

1. Engineering Hydrology by K. Subramanya, Tata McGraw-Hill Publication
2. Hydrology by H.M. Raghunath, New Age International Publishers
3. A text book of Hydrology by D.P. Jaya Rami Reddy, University Science Press

**REFERENCE BOOKS:**

1. Applied Hydrology, V T Chow, D R Maidment and W L Mays, McGraw-Hill Publication
2. Hydrology, M Wanielista, R Kersten, R Eaglin, John Wiley



**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

**Subject: Reinforced Concrete Design – I (Theory)**

**Subject Code: CSE-305B**

**Detailed Content**

**Unit No.1 Introduction, Working Stress Design Method**

- Topic No.1 : Reinforced concrete, definition, properties of materials
- Topic No.2 : Grades of concrete and reinforcing steel, stress-strain curves, permissible stresses
- Topic No.3 : Concrete structural systems-slabs, beams, columns and foundations, design philosophies working stress design
- Topic No.4 : Ultimate strength and limit state design method
- Topic No.5 : Codal Provision for RC Elements: (I) General (II) for ductility
- Topic No.6 : Introduction, Assumptions, derivation of design constants
- Topic No.7 : Problems on computation of moment of resistance, determination of stresses
- Topic No.8 : Design of rectangular beams reinforced in tension and compression
- Topic No.9 : Flanged beams and slabs

**Unit No.2 Working Stress Design Method, Working Stress Design Method**

- Topic No.10: Design for shear and bond and torsion
- Topic No.11: Permissible shear strength, maximum shear strength, shear reinforcement and design procedure for shear reinforcement
- Topic No.12: Bond and development length, anchoring and curtailment of bars
- Topic No.13: Design for Compression, Design of short and long columns
- Topic No.14: Sections subjected to direct load and uniaxial bending

**Unit No.3 Limit State Design Method**

- Topic No.15: Introduction, Limit States, Characteristic values
- Topic No.16: Characteristic strength, characteristic loads
- Topic No.17: Design values for materials and loads, factored loads
- Topic No.18: Limit State of Collapse (Flexure) Types of failures
- Topic No.19: Assumptions for analysis and design of singly reinforced
- Topic No.20: Doubly reinforced sections, and flanged sections

**Unit No.4 Limit State Design Method**

- Topic No.21: Limit State of Collapse (Shear, bond and torsion) Introduction
- Topic No.22: Design for shear, structural components subjected to torsion
- Topic No.23: Design of rectangular beam section for torsion
- Topic No.24: Development length, continuation of reinforcement (beyond cut off points)
- Topic No.25: Limit State of Collapse (Compression) Columns and their classification
- Topic No.26: Reinforcement in columns, assumptions
- Topic No.27: Short and long (both tied and helical) columns subjected to axial load
- Topic No.28: Short columns subject to axial bending
- Topic No.29: Short columns subject to uniaxial and biaxial bending

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	2	-	5	25	75	3 hours	100

**TEXT BOOKS:**

1. Reinforced Concrete Design, M.L. Gambhir, Macmillan India Limited, New Delhi
2. Limit State Design of Reinforced Concrete, A.K. Jain, Nem Chand Brothers, Roorkee.
3. Limit State Design, Ram Chandra, Standard Book House, New Delhi

**REFERENCE BOOKS:**

1. Reinforced Concrete Design, Pillai & Menon, Tata McGraw Hill Publishers, New Delhi



# PM

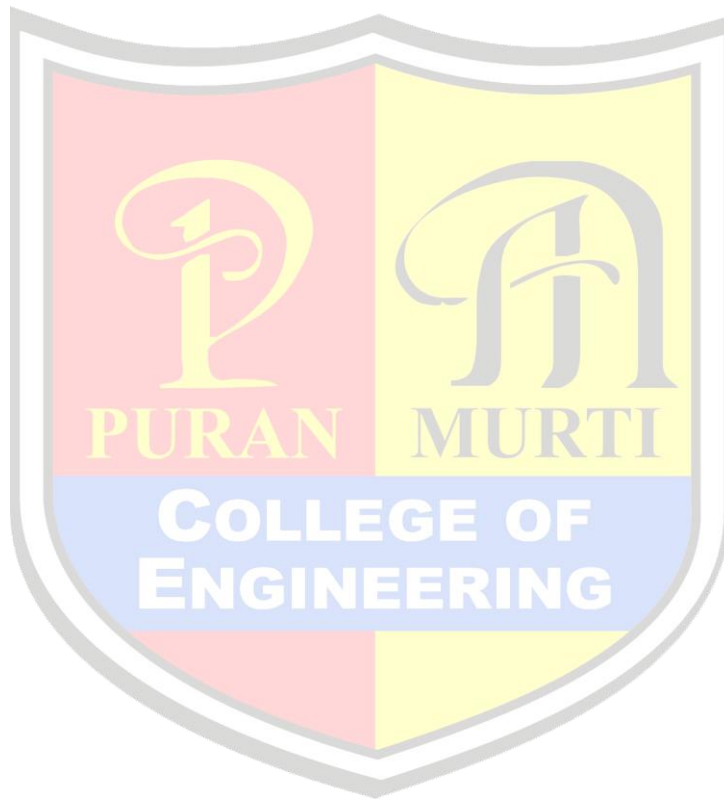
## COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India,  
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

2. Reinforced Concrete Structures by Paulay and Thomas Park
3. Reinforced Concrete Design by Nilson and Winter
4. Reinforced Concrete Fundamentals Keith by Ferguson

### Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.





**SYLLABUS: B Tech (CE)**

**Department: Civil Engineering – 5<sup>th</sup> Semester**

**Subject: Environmental Engineering – I(Theory)**

**Subject Code: CSE-307B**

**Detailed Content**

**Unit No.1 Water Sources, Water Supply Systems**

- Topic No.1 : Definition and Scope of Environmental Engineering, Surface and ground water sources
- Topic No.2 : Selection and development of sources
- Topic No.3 : Municipal water demands and demand variations
- Topic No.4 : Population forecasting and water demand estimations
- Topic No.5 : Intakes and transmission systems
- Topic No.6 : Pipes for transporting water and their design

**Unit No.2 Water Quality, Water treatment - I**

- Topic No.7 : Physical, chemical and biological water quality parameters
- Topic No.8 : Water quality index; Water quality standards
- Topic No.9 : Classification of water bodies
- Topic No.10: Water treatment schemes; Basic principles of water treatment
- Topic No.11: Design of plain sedimentation
- Topic No.12: Coagulation and flocculation, filtration – slow, rapid and pressure
- Topic No.13: Disinfection units. Data and background information for the design of water supply system

**Unit No.3 Water treatment – II, Design of Water Supply Systems**

- Topic No.14: Fundamentals of water softening, fluoridation and defluoridation
- Topic No.15: Water desalinization and demineralization
- Topic No.16: Water supply network design
- Topic No.17: Design of balancing and service reservoirs
- Topic No.18: Operation and maintenance of water supply systems

**Unit No.4 Pumps and pumping stations, Small scale and household level water purification system and water fixtures**

- Topic No.19: Types of pumps
- Topic No.20: Their characteristics and efficiencies
- Topic No.21: Pump operating curves
- Topic No.22: Selection of pumps
- Topic No.23: Pumping stations
- Topic No.24: Small scale water purification system and water fixtures
- Topic No.25: Household level water purification system and water fixtures

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**TEXT BOOKS:**

1. Manual on Water Supply and Treatment by Ministry of Urban Development, New Delhi.
2. Water Supply and Sewerage, McGhee, McGraw Hill.
3. Environmental Engineering, Vol. I, S.K. Garg, Khanna Publishers, New-Delhi.

**REFERENCE BOOKS:**

1. Environmental Engineering Peavy, Rowe and Tchobanglous, McGraw Hill.
2. Water and Waste Water Engineering (Vol. 1&2), Fair, Geyer & Okun, John Wiley, New York.
3. Water Supply Engineering P.N. Modi, Standard Book House New-Delhi.
4. Standard Methods for the Examination of Water and Waste Water, American Public Health Association.



### SYLLABUS: B Tech (CE)

Department: Civil Engineering – 5<sup>th</sup> Semester

Subject: Transportation Engineering – I (Theory)

Subject Code: CSE-309B

#### Detailed Content

#### Unit No.1 Highways development Planning, Highway materials and testing

- Topic No.1 : Introduction, Different modes of transport
- Topic No.2 : Development of Transport System
- Topic No.3 : Phased development of Roads in India
- Topic No.4 : Highway Surveys & Alignment Population forecasting and water demand estimations
- Topic No.5 : Design, Drawings, Estimates & Project Report
- Topic No.6 : Sub grade, sub base and base course materials
- Topic No.7 : Bituminous materials, testing of soil
- Topic No.8 : Aggregate and bitumen

#### Unit No.2 Geometric Design of Highways, Design of Pavements

- Topic No.9 : Introduction, Highways Classification, Right of way
- Topic No.10: Land width, width of formation
- Topic No.11: Width of pavement, Sight Distances
- Topic No.12: Camber, horizontal and vertical Road Curves
- Topic No.13: Transition Curves
- Topic No.14: Types of pavements, Factors affecting design of pavements
- Topic No.15: Wheel load factor, Climatic Factors
- Topic No.16: Structure of Flexible pavement, Function of various components of Flexible pavement
- Topic No.17: Design of flexible pavements by G.I. & CBR methods
- Topic No.18: Stresses in rigid pavements, design of rigid pavements by IRC method

#### Unit No.3 Traffic Studies, Road Safety Audits

- Topic No.19: Road user characteristics, Importance of traffic studies
- Topic No.20: pot speed, speed and delay and origin and destination studies. Vehicular flow models their characteristics and efficiencies
- Topic No.21: Stream variables: Spacing and concentration, headway and flow, mean speed
- Topic No.22: Time distance diagram of flow. Traffic operations and control devices, intelligent transport systems
- Topic No.23: Road Safety Audits: Safety concerns in highway projects
- Topic No.24: Systems approach, various stages of Safety Audit, Preparation of Audit Reports

#### Unit No.4 Highway construction, Maintenance

- Topic No.25: Road types--earth roads, gravel roads, water bound macadam
- Topic No.26: Bituminous pavement including surface treatment
- Topic No.27: Premix carpet, mastic asphalt, bituminous macadam
- Topic No.28: Bituminous concrete and cement concrete roads
- Topic No.29: Construction of earth, gravel and water bound macadam roads, Construction Equipments.
- Topic No.30: Introduction, Maintenance of Earth, gravel, WBM, GSB, WMM Roads, Bituminous Roads
- Topic No.31: Maintenance of berms, Side Slopes, Pavement edge and draining work
- Topic No.32: Failures of flexible and rigid pavements
- Topic No.33: Maintenance, evaluation and its strengthening.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Internal Assessment		External Assessment (Examination)			
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

#### TEXT BOOKS:

1. Highway Engineering by Khanna and Justo, Nem Chand & Brothers, Roorkee





# PM

## COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India  
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

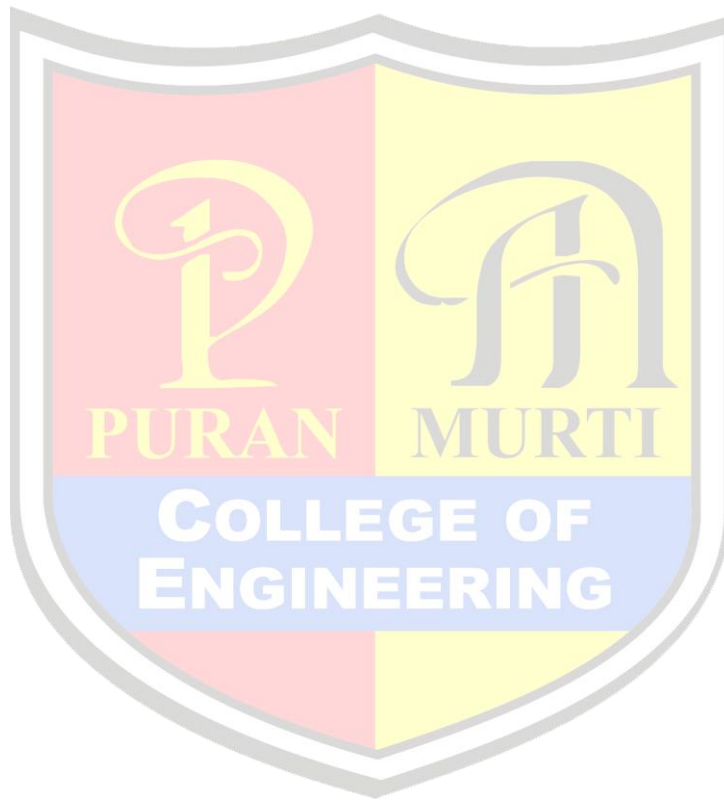
2. Highway Engineering by L.R. Kadyali, Nem Chand & Brothers, Roorkee

### REFERENCE BOOKS:

1. Highway Engineering by Oglesby and Hews
2. Transportation Engineering by G.V. Rao, Tata McGraw Hill Publisher, New Delhi
3. Principles of Pavement Design by E.J. Yodder
4. Traffic Engineering by Matson, Smith & Hurd

### Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.





**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

Subject: Geo-Mechanics (Theory)

Subject Code: CSE-311B

**Detailed Content**

**Unit No.1 Basic Soil Properties, Rock Mechanics**

- Topic No.1 : Introduction to soil mechanics. Soil formation, various soil types
- Topic No.2 : Soil map of India, Phase relationships; Index properties
- Topic No.3 : Sieve & hydrometer analysis, Atterberg's limits
- Topic No.4 : Sensitivity, thixotropy, and plasticity charts
- Topic No.5 : Indian standard and Unified classification systems of soils, Introduction to Clay minerals, their characteristics
- Topic No.6 : Soil structure, granular soil fabric
- Topic No.7 : Importance, composition of rocks, classification for engg. purposes
- Topic No.8 : Theories of brittle failure, elastic and dynamic properties of rocks

**Unit No.2 Permeability of soil, Effective Stress Principle**

- Topic No.9 : Darcy's law, validity of Darcy's Law, seepage velocity
- Topic No.10: Factors affecting permeability, Laboratory and field determination of permeability
- Topic No.11: Flow net and its properties, Laplace equation
- Topic No.12: Methods of drawing flownet, seepage through earth dams
- Topic No.13: Exit gradient and seepage pressures, phenomenon of piping and heaving
- Topic No.14: Filters. Anisotropy & average permeability of layered soils
- Topic No.15: Capillarity, types of head, seepage forces
- Topic No.16: Quick sand condition, and critical hydraulic gradient

**Unit No.3 Compaction, Compressibility and Consolidation**

- Topic No.17: Compaction tests, OMC, factors affecting compaction
- Topic No.18: Control of compaction, field compaction equipment and their suitability
- Topic No.19: Isotropic one and three dimensional compressions
- Topic No.20: Terzaghi's theory, time rate of consolidation
- Topic No.21: Consolidation test, Compressibility & Coefficient of Consolidation
- Topic No.22: NC, OC soils, determination of pre-consolidation pressure
- Topic No.23: Settlement analysis, secondary consolidation

**Unit No.4 Stresses in Soils, Shear Strength**

- Topic No.24: Boussinesq and Westergarrd's formulae, pressure bulbs
- Topic No.25: Newmark's chart. Approximate methods
- Topic No.26: Mohr's circle, Failure theories
- Topic No.27: Direct, tri-axial, unconfined and vane shear tests
- Topic No.28: Drainage conditions, Concept of pore pressure coefficients
- Topic No.29: Shear characteristics of normally consolidated, over consolidated clays
- Topic No.30: Shear characteristics of dense and loose sands
- Topic No.31: Dilatancy, residual strength, stress path, constant volume shear

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**TEXT BOOKS:**

1. Basic and Applied Soil mechanics by Gopal Ranjan & A.S.R. Rao, New Age Publisher, New Delhi
2. A text book on Soil Mechanics and Foundation Engineering by V.N.S. Murthy, U.B.S. Publisher, New Delhi
3. Geotechnical Engg. by Parshotham Raj, Tata McGraw Hill, New Delhi.

**REFERENCE BOOKS:**

1. Soil Mechanics by R. F. Craig, Chapman and Hall, U.K.



# PM

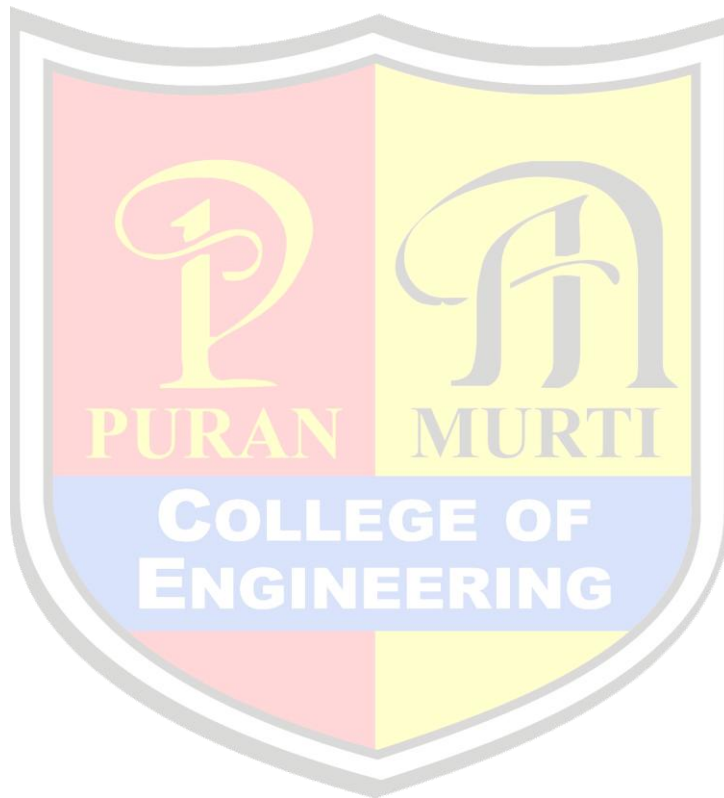
## COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India,  
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

2. Principles of Soil Mechanics by B.M. Das, PWS and Kent Publisher USA.
3. Geotechnical Engg. by Venkatramaiah, New Age Publisher, New Delhi.
4. Modern Geotechnical Engineering Alam Singh

### Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.





**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

Subject: Reinforced Concrete Design - I Lab

Subject Code: CSE-313B

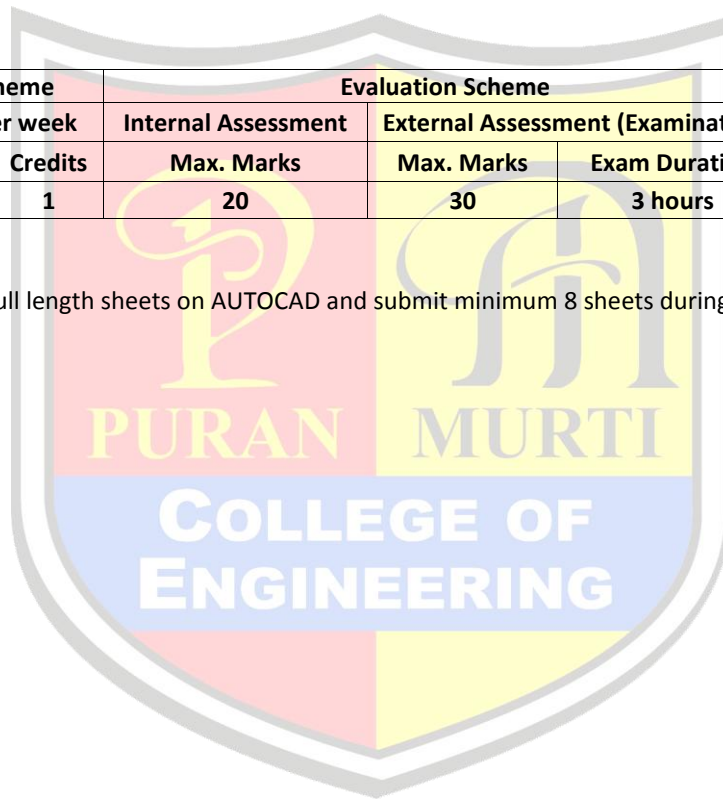
**Detailed Content**

**Structural Drawings through AUTOCAD of the followings:**

1. Singly reinforced concrete beams
2. Doubly reinforced concrete beams
3. Flanged beams
4. Cracking pattern of reinforced concrete beams
5. Simply supported and cantilever slabs
6. Continuous slabs
7. Two way slabs
8. Columns

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 hours	50

Students are required to draw full length sheets on AUTOCAD and submit minimum 8 sheets during examinations.





**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

Subject: Environmental Engineering - I Lab

Subject Code: CSE-315B

**Detailed Content**

**List of Experiments:**

1. Flow measurements in closed conduits – venturimeter, orifices.
2. Determination of Color & Turbidity.
3. Determination of Solids: Total, Dissolved and Suspended; dissolved solids through conductivity.
4. Determination of Alkalinity and its species.
5. Determination of pH, and Acidity and its species.
6. Determination of Hardness (different types)
7. Determination of Chlorides.
8. Determination of Fluorides.
9. Jar test for optimum coagulant dose estimation.
10. Determination of residual chlorine and chlorine dose.
11. MPN Test.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 hours	50

**Note:**

Ten experiments are to be performed in the Semester taking atleast seven experiments from the above list. Remaining three experiments should be performed as designed & set by the concerned Institution as per the scope of the syllabus.



**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

**Subject: Transportation Engineering-I Lab**

**Subject Code: CSE-317B**

**Detailed Content**

**List of Experiments:**

1. Aggregate Impact Test
2. Los Angles Abrasion Test on Aggregates
3. Crushing Strength Test on Aggregates
4. Penetration Test on Bitumen.
5. Ductility test on Bitumen.
6. Water absorption and specific gravity tests.
7. Softening Point Test on Bitumen
8. Flash & fire point test.
9. Determination of speed by radar and endoscopes.
10. Study of driving skills.
11. CBR test.
12. Traffic Volume Study
13. Accident Study

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Credits	Internal Assessment	External Assessment (Examination)			
L	T		P	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 hours	50

**Note:**

Atleast ten experiments are to be performed in the Semester however some more experiments may also be performed as designed & set by the concerned Institution as per the scope of the syllabus.



**SYLLABUS: B Tech (CE)**

Department: Civil Engineering – 5<sup>th</sup> Semester

**Subject: Geo Mechanics Lab**

**Subject Code: CSE-319B**

**Detailed Content**

**List of Experiments:**

1. Visual Soil Classification
2. Determination of water content.
3. Determination of field density by Core cutter method
4. Determination of field density by Sand replacement method
5. Grain size Analysis by Mechanical Method.
6. Grain size Analysis by Hydrometer Method.
7. Determination of Specific Gravity by Psychomotor.
8. Determination of Atterberg's limits
9. Determination of Permeability by constant head permeameter.
10. Determination of permeability by variable head permeameter.
11. Proctor's Compaction Test
12. Unconfined Compression Test.
13. Direct Shear Test.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Internal Assessment		External Assessment (Examination)			
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 hours	50

**Note:**

Ten experiments are to be performed in the Semester taking atleast seven experiments from the above list. Remaining three experiments should be performed as designed & set by the concerned Institution as per the scope of the syllabus.