

COURSE STRUCTURE & DETAILED SYLLABUS

ACE - R20

CIVIL ENGINEERING

B. TECH FOUR YEAR DEGREE COURSE STRUCTURE & SYLLABUS

(2020 Batch)

III Year I Semester



ACE

Engineering College

Ankushapur(V), Ghatkesar(M) - 501 301

(An Autonomous Institution, Affiliated to JNTUH ,Hyderabad)



ACE
Engineering College
 Ankushapur(V), Ghatkesar(M), Medchal.Dist - 501 301
(Autonomous)
B.TECH. FOUR YEAR DEGREE
COURSE CIVIL ENGINEERING
COURSE STRUCTURE
III Year I Semester

III Year							I Semester
S.No.	Course Type	Course Code	Course Title	Periods Per Week			Credits
				L	T	P	
1	PCC	CE501PC	Structural Analysis-II	3	0	0	3
2	PCC	CE505PC	Geotechnical Engineering	3	0	0	3
3	PCC	CE503PC	Structural Engineering –I (RCC)	3	1	0	4
4	PCC	CE504PC	Transportation Engineering	3	0	0	3
5	PEC		Professional Elective-I	3	0	0	3
6	HSMC	SM505MS	Engineering Economics and Accountancy	2	0	0	2
7	PCC	CE506PC	Highway Engineering and Concrete Technology Lab	0	0	3	1.5
8	PCC	CE507PC	Geotechnical Engineering Lab	0	0	3	1.5
9	HSMC	EN508HS	Advanced English Communication Skills Lab	0	0	2	1
10	MC	*MC509	Intellectual Property Rights	1	0	0	0
11	MC	MC510	Cyber Security	1	0	0	0
Total				19	1	8	22

Professional Elective – I

CE511PE	Concrete Technology
CE512PE	Theory of Elasticity
CE513PE	Rock Mechanics

Professional Elective – II

CE611PE	Prestressed Concrete
CE612PE	Elements of Earth Quake Engineering
CE613PE	Advanced Structural Analysis

Professional Elective-III

CE711PE	Remote Sensing &GIS
CE712PE	Ground Improvement Techniques
CE713PE	Advanced Structural Design

Professional Elective -IV

CE721PE	Irrigation and Hydraulic Structures
CE722PE	Pipeline Engineering
CE723PE	Ground Water Hydrology

Professional Elective –V

CE811PE	Solid Waste Management
CE812PE	Environmental Impact Assessment
CE813PE	Air pollution

Professional Elective -VI

CE821PE	Airports, Railways and Waterways
CE822PE	Urban Transportation Planning
CE823PE	Finite Element Methods for Civil Engineering

Open Elective – I

CE600OE	Disaster Preparedness & Planning Management (CE to Other Branches)
CS601OE	Fundamentals of Management For Engineers (Open Elective - I) (H&S to CE)
CS600OE	Entrepreneurship
CS602OE	Cyber Law & Ethic
EI600OE	Basics of Sensors Technology
EC600OE	Fundamentals of Internet of Things
EE600OE	Reliability Engineering
EE601OE	Renewable Energy Sources
ME600OE	Quantitative Analysis for Business Decisions

Open Elective – II

CE700OE	Remote Sensing & GIS (CE to Other Branches)
CS700OE	Data Structures (Open Elective - II) (CSE to CE)
CS701OE	Artificial Intelligence
CS702OE	Python Programming
CS703OE	Java Programming
EI700OE	Fundamentals of Biomedical Applications
EC700OE	Electronic Sensors
EE700OE	Utilization of Electrical Energy
EE701OE	Electric Drives and Control
ME700OE	Basic Mechanical Engineering

Open Elective – III

CE800OE	Environmental Impact Assessment (CE to Other Branches)
EE800OE	Basics of Power Plant Engineering
CS800OE	Machine Learning
CS801OE	Mobile Application Development
CS802OE	Scripting Languages
CS803OE	Database Management Systems
EI800OE	Basics of Virtual Instrumentation
EC800OE	Measuring Instruments
EE801OE	Energy Sources and Applications
ME800OE	Non-Conventional Sources of Energy (Open Elective - III) (ME to CE)

CE501PC: STRUCTURAL ANALYSIS – II

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE501PC	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
Prerequisite: Structural Analysis - I								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> Identify the various actions in arches. Understand classical methods of analysis for statically indeterminate structures. Differentiate the approximate and numerical methods of analysis for indeterminate structures. Find the degree of static and kinematic indeterminacies of the structures. Plot the variation of S.F and B.M when a moving load passes on indeterminate structure. 								
<p>Course Outcomes: After the completion of the course student should be able to:</p> <ul style="list-style-type: none"> Analyze the two hinged arches. Solve statically indeterminate beams and portal frames using classical methods Sketch the shear force and bending moment diagrams for indeterminate structures. Formulate the stiffness matrix and analyze the beams by matrix methods. 								
Unit: I	Two Hinged Arches, Moment Distribution Method				No. of Classes:9			
<p>Introduction – Classification of Two hinged Arches – Analysis of two hinged parabolic arches – Secondary stresses in two hinged arches due to temperature and elastic shortening of rib.</p> <p>Analysis of continuous beams with and without settlement of supports using - Analysis of Single Bay Single Storey Portal Frames including side Sway - Analysis of inclined frames - Shear force and Bending moment diagrams, Elastic curve.</p>								
Unit: II	Kani's Method, Cables and suspension bridges				No. of Classes: 9			
<p>Kani's Method: Analysis of continuous beams including settlement of supports - Analysis of single bay single storey and single bay two Storey Frames including Side Sway using Kani's Method - Shear force and bending moment diagrams - Elastic curve.</p> <p>Cables and suspension bridges: Equilibrium of a Suspension Cable subjected to concentrated loads and uniformly distributed loads - Length of a cable - Cable with different support levels - Suspension cable supports - Suspension Bridges - Analysis of Three Hinged Stiffening Girder Suspension Bridges.</p>								
Unit: III	Approximate Methods Of Analysis				No. of Classes: 9			

Introduction – Analysis of multi-storey frames for lateral loads: Portal Method, Cantilever method and Factor method - Analysis of multi-storey frames for gravity loads - Substitute Frame method - Analysis of Mill bents.		
Unit: IV	Matrix Methods of Analysis	No. of Classes: 9
Introduction to Flexibility and Stiffness matrix methods of analyses using ‘system approach’ upto three degree of indeterminacy– Analysis of continuous beams including settlement of supports using flexibility and stiffness methods -Analysis of pin-jointed determinate plane frames using flexibility and stiffness methods- Analysis of single bay single storey portal frames using stiffness method - Shear force and bending moment diagrams - Elastic curve.		
Unit: V	Influence Lines For Indeterminate Beams	No.of Classes: 9
Introduction – influence line diagram for shear force and bending moment for two span continuous beam with constant and different moments of inertia - influence line diagram for shear force and bending moment for propped cantilever beams.		
Text Books:		
<ol style="list-style-type: none"> 1. Structural Analysis Vol –I &II by Vazarani and Ratwani, Khanna Publishers. 2. Structural Analysis Vol I & II by G.S. Pandit S.P. Gupta Tata McGraw Hill Education Pvt. Ltd. 3. Indeterminate Structural Analysis by K.U. Muthu et al., I.K. International Publishing House Pvt.Ltd. 		
Reference Books:		
<ol style="list-style-type: none"> 1. Structural analysis T. S Thandavamoorthy, Oxford university Press 2. Mechanics of Structures Vol –II by H.J. Shah and S.B. Junnarkar, Charotar Publishing House Pvt. Ltd. 3. Basic Structural Analysis by C.S.Reddy., Tata McGraw Hill Publishers. 4. Examples in Structural Analysis by William M.C. McKenzie, Taylor & Francis. 5. Structural Analysis by R. C. Hibbeler, Pearson Education 6. Structural Analysis by Devdas Menon, Narosa Publishing House. 7. Advanced Structural Analysis by A.K. Jain, Nem Chand & Bros. 		
Web References:		
https://nptel.ac.in/courses/105/105/105105109/		
E-Text Books:		

CE505PC: GEOTECHNICAL ENGINEERING

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE505PC	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes:0			Total Classes: 45			
Prerequisite: Fluid Mechanics and Strength of Materials								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> • understand the formation of soil and classification of the soils • determine the Index & Engineering Properties of Soils • determine the flow characteristics & stresses due to externally applied loads • estimate the consolidation properties of soils • estimate the shear strength and seepage loss 								
<p>Course Outcomes: At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Characterize and classify the soils • Able to estimate seepage, stresses under various loading conditions and compaction characteristics • Able to analyse the compressibility of the soils • Able to understand the strength of soils under various drainage conditions. 								
Unit: I	Introduction and Index Properties of Soils				No. of Classes: 9			
<p>Introduction: Soil formation and structure – moisture content – Mass, volume relationships – Specific Gravity-Field density by core cutter and sand replacement methods-Relative density</p> <p>Index Properties of Soils: Grain size analysis – consistency limits and indices – I.S.</p> <p>Classification of soils.</p>								
Unit: II	Permeability, Effective Stress & Seepage Through Soils				No. of Classes: 9			
<p>Permeability: Soil water – capillary rise – flow of water through soils – Darcy's law-permeability – Factors affecting permeability – laboratory determination of coefficient of permeability –Permeability of layered soils.</p> <p>Effective Stress & Seepage Through Soils: Total, neutral and effective stress – principle of effective stress - quick sand condition – Seepage through soils – Flownets: Characteristics and Uses.</p>								
Unit: III	Stress Distribution in Soils, Compaction				No. of Classes: 9			
<p>Stress Distribution in Soils: Boussinesq's and Westergaard's theories for point load, uniformly loaded circular and rectangular areas, pressure bulb, variation of vertical stress under point load along the vertical and horizontal plane, and Newmark's influence chart for irregular areas.</p> <p>COMPACTION: Mechanism of compaction – factors affecting compaction – effects of compaction on soil properties – Field compaction Equipment – compaction quality control.</p>								

Unit: IV	Consolidation	No. of Classes: 9
<p>Consolidation: Types of compressibility – Immediate Settlement, primary consolidation and secondary consolidation - stress history of clay; e-p and e-log(p) curves – normally consolidated soil, over consolidated soil and under consolidated soil - preconsolidation pressure and its determination - Terzaghi's 1-D consolidation theory – coefficient of consolidation: square root time and logarithm of time fitting methods - computation of total settlement and time rate of settlement.</p>		
Unit: V	Shear Strength of Soils	No. of Classes: 9
<p>Shear Strength of Soils: Importance of shear strength – Mohr's– Coulomb Failure theories – Types of laboratory tests for strength parameters – strength tests based on drainage conditions – strength envelopes – Shear strength of sands - dilatancy – critical void ratio, Introduction to stress path method.</p>		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Basic and Applied Soil Mechanics by Gopal Ranjan & ASR Rao, New age International Pvt Ltd, 2. Soil Mechanics and Foundation Engineering by VNS Murthy, CBS Publishers and Distributors. 3. Foundation Engineering by P.C. Varghese, PHI 		
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Soil Mechanics and Foundation Engg. By K.R. Arora, Standard Publishers and Distributors, Delhi. 2. Principals of Geotechnical Engineering by Braja M. Das, Cengage Learning Publishers. 3. Geotechnical Engineering by C. Venkataramiah, New age International Pvt. Ltd, (2002). 4. Geotechnical Engineering Principles and Practices by Cuduto, PHI International. 5. Geotechnical Engineering by Manoj Dutta & Gulati S.K – Tata McGraw-Hill Publishers New Delhi. 6. Soil Mechanics and Foundation by by B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, Laxmi, publications Pvt. Ltd., New Delhi 		
<p>Web References:</p> <p>https://nptel.ac.in/courses/105/103/105103097/</p>		
<p>E-Text Books:</p> <p>https://www.hzu.edu.in/engineering/Geotechnical_Engineering.pdf</p>		

CE503PC: STRUCTURAL ENGINEERING – I (RCC)

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE503PC	PCC	L	T	P	C	CIA	SEE	Total
		3	1	0	4	30	70	100
Contact Classes: 45	Tutorial Classes: 15	Practical Classes: 0			Total Classes: 60			
Prerequisite: Basic knowledge of Engineering Mechanics and strength of materials.								
<p>Course Objectives: The objective of this Course is:</p> <ul style="list-style-type: none"> Identify the basic components of any structural system and the standard loading for the RCstructure Identify and tell the various codal provisions given in IS. 456 Describe the salient feature of limit state method, compare with other methods and the concepts of limit state of collapse and limit state of serviceability Evaluate the behaviour of RC member under flexure, shear and compression, torsion and bond. 								
<p>Course Outcome: On completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> Compare and Design the singly reinforced, doubly reinforced and flanged sections. Design the axially loaded, uniaxial and biaxial bending columns. Classify the footings and Design the isolated square, rectangular and circular footings Distinguish and Design the one-way and two-way slabs. 								
Unit: I							No. of Classes: 12	
<p>Introduction- Structure - Components of structure - Different types of structures - Equilibrium and compatibility- Safety and Stability - Loads – Different types of Loads – Dead Load, Live Load, Earthquake Load and Wind Load- Forces – What is meant by Design? – Different types of materials –RCC, PSC and Steel – Planning of structural elements- Concepts of RCC Design – Different methods of Design- Working Stress Method and Limit State Method – Load combinations as per Limit state method - Materials - Characteristic Values – Partial safety factors – Behaviour and Properties of Concrete and Steel- Stress Block Parameters as per IS 456 -2000.</p> <p>Limit state Analysis and design of sections in Flexure – Behaviour of RC section under flexure - Rectangular, T and L-sections, singly reinforced and doubly reinforced Beams – Detailing of reinforcement.</p>								
Unit: II							No. of Classes: 12	
<p>Design for Shear, Bond and Torsion - Mechanism of shear and bond failure - Design of shear using limit state concept – Design for Bond –Anchorage and Development length of bars - Design of sections for torsion - Detailing of reinforcement.</p>								

Unit: III	No. of Classes: 12
Design of Two-way slabs with different end conditions, one-way slab, and continuous slab Using I S Coefficients - Design of dog-legged staircase – Limit state design for serviceability for deflection, cracking and codal provisions.	
Unit: IV	No. of Classes: 12
Design of compression members - Short Column - Columns with axial loads, uni-axial and bi-axial bending – Use of design charts- Long column – Design of long columns - I S Code provisions	
Unit: V	No. of Classes: 12
Design of foundation - Different types of footings – Design of wall footing – Design of flat isolated square, rectangular, circular footings and combined footings for two columns.	
Text Books:	
<ol style="list-style-type: none"> 1. Limit state designed of reinforced concrete – P.C. Varghese, PHI Learning Pvt. Ltd. 2. Reinforced concrete design by S. Unnikrishna Pillai & Devdas Menon, Tata McGraw Hill. 3. Reinforced concrete design by N. Krishna Raju and R.N. Pranesh, New age International Publishers 	
Reference Books:	
<ol style="list-style-type: none"> 1. Reinforced concrete structures, Vol. 1, by B.C. Punmia, Ashok Kumar Jain and Arun KumarJain, Laxmi, publications Pvt. Ltd. 2. Fundamentals of Reinforced concrete design by M. L. Gambhir, Prentice Hall of IndiaPvt.Ltd., 3. Design of Reinforced Concrete Structures by N.Subramanian, Oxford University Press 4. Design of concrete structures by J.N. Bandhyopadhyay PHI Learning Private Limited. 5. Design of Reinforced Concrete Structures by I. C. Syal and A. K. Goel, S. Chand & company. 6. Design of Reinforced Concrete Foundations – P.C. Varghese Prentice Hall of India. 	
Web References:	
http://nptel.ac.in/courses/105105105/	
E-Text Books:	
https://books.google.co.in/books?id=o_mKzwhbeHkC&printsec=frontcover&redir_esc=y#v=onepage&q&f=false	
https://kupdf.net/download/rcc-design-n-krishna-raju-pdf_5910a44adc0d60d10f959e7f_pdf	

CE504PC: TRANSPORTATION ENGINEERING

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE504PC	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
Prerequisite: Surveying								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> This course aims at providing a comprehensive insight of various elements of Highway transportation engineering. Topics related to the highway development, characterisation of different materials needed for highway construction, structural and geometric design of highway pavements along with the challenges and possible solutions to the traffic related issues will be covered as a part of this course 								
<p>Course Outcomes: Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> An ability to apply the knowledge of mathematics, science and engineering in the areas of traffic engineering, highway development and maintenance An ability to design, conduct experiments to assess the suitability of the highway materials like soil, bitumen, aggregates and a variety of bituminous mixtures. Also the students will develop the ability to interpret the results and assess the suitability of these materials for construction of highways. An ability to design flexible and rigid highway pavements for varying traffic compositions as well as soil subgrade and environmental conditions using the standards stipulated by Indian Roads Congress. An ability to evaluate the structural and functional conditions of in-service highway pavements and provide solution in the form of routine maintenance measures or designed overlays using Indian Roads congress guidelines. An ability to assess the issues related to road traffic and provide engineering solutions supported with an understanding of road user psychological and behavioural patterns. 								
Unit: I	Introduction					No. of Classes: 9		
Introduction, History and Importance of Highways, Characteristics of road transport, Current road development plans in India, Highway development in India, Highway planning, Highway alignment, Engineering surveys for Highway alignment, Highway projects, Highway drawings and reports, Detailed Project Report preparation, PPP schemes of Highway Development in India, Government of India initiatives in developing the highways and expressways in improving the mobility and village road development in improving the accessibility.								
Unit: II	Introduction to Highway Geometric Design					No. of Classes: 9		
Introduction to Highway Geometric Design; Width of Pavement, Formation and Land, Cross Slopes etc; Concept of Friction: Skid and Slip; Elements of geometric design of highways; Sight Distances: Stopping Sight Distance, Overtaking Sight Distance and Intermediate Sight Distance; Horizontal alignment: Design of horizontal curves, super elevation, extra widening of pavement at curves; Vertical Alignment: Gradients, Compensation in Gradient, Design of summit curves and valley curves using different criteria; Integration of Horizontal and Vertical Curves.								

Unit: III	Basic traffic characteristics	No. of Classes: 9
<p>Basic traffic characteristics: Speed, volume and concentration, relationship between flow, speed and concentration; Highway capacity and Level of service (LOS) concepts: Factors affecting capacity and LOS, relationship between V/C ratio and LOS; Traffic volume and spot speed studies: Methods; Road Safety; Traffic Signals: Types, warrants for signalization, design of isolated traffic signal by IRC method; Parking and road accidents: Types of parking facilities – on-street and off street, introduction to parking studies; Accident studies, road safety auditing; Introduction to street lighting; Road Intersections: Design considerations of at-grade intersections, introduction to interchanges.</p>		
Unit: IV	Tests on soils	No. of Classes: 9
<p>Tests on soils: CBR, Field CBR, modulus of sub-grade reaction, Tests on Aggregates: specific gravity, shape (flakiness and elongation indices), angularity number, water absorption, impact, abrasion, attrition, crushing resistance, durability (weathering resistance), stone polishing value of aggregates; Tests on bitumen: spot, penetration, softening point, viscosity, ductility, elastic recovery, flash and fire points, Introduction to modified bituminous binders like crumb rubber modified, natural rubber modified and polymer modified bitumen binders; Bituminous Concrete: Critical parameters controlling bituminous concrete mixture design, aggregate blending concepts viz. Rothfuch's method, trial and error procedure. Introduction to advanced concretes for road applications.</p>		
Unit: V	Introduction to Pavement Design	No. of Classes: 9
<p>Introduction to Pavement Design: Types of pavements and their typical cross sections: flexible, rigid and composite; Flexible Pavement analysis and design: Introduction to multi layered analysis, IRC 37-2012 method of flexible pavement design; Rigid pavement analysis and design: Factors controlling rigid pavement design, types of stresses in rigid pavements, critical load positions, load stresses and temperature stresses in interior, corner and edge locations of jointed plain cement concrete pavements labs, IRC 58-2015 method of rigid pavement design; Overlay Designs: Types of overlays on flexible and rigid pavements.</p>		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Fluid Mechanics by Modi and Seth, Standard Book House. 2. Fluid Mechanics and Hydraulic machines by Manish Kumar Goyal, PHI learning Private Limited, 2015. 3. Fluid Mechanics by R.C. Hibbeler, Pearson India Education Services Pvt. Ltd. 		
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Theory and Applications of Fluid Mechanics, K. Subramanya, Tata McGraw Hill. 2. Introduction to Fluid Mechanics and Fluid Machines by SK Som, Gautam Biswas, Suman Chakraborty, Mc Graw Hill Education (India) Private Limited. 3. Fluid Mechanics and Machinery, C.S.P. Ojha, R. Berndtsson and P. N. Chadramouli, Oxford University Press, 2010. 4. Fluid mechanics & Hydraulic Machines, Domkundwar & Domkundwar Dhanpat Rai & Co. 5. Fluid Mechanics and Hydraulic Machines, R. K. Bansal, Laxmi Publication Pvt. Ltd. 		
<p>Web References:</p> <p>https://nptel.ac.in/courses/105/101/105101087/</p>		
<p>E-Text Books:</p> <p>https://drive.google.com/file/d/1YdiaC8GW_qhm6wv_L4nlzv7Jex1ju2T_/view</p>		

CE511PE: CONCRETE TECHNOLOGY (Professional Elective – I)

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE511PE	PEC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
Prerequisite: Building materials and construction								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> • Know different types of cement as per their properties for different field applications. • Understand Design economic concrete mix proportion for different exposure conditions and intended purposes. • Know field and laboratory tests on concrete in plastic and hardened stage. 								
<p>Course Outcomes: Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Determine the properties of concrete ingredients i.e. cement, sand, coarse aggregate by conducting different tests. Recognize the effects of the rheology and early age properties of concrete on its long-term behavior. • Apply the use of various chemical admixtures and mineral additives to design cement-based materials with tailor-made properties • Use advanced laboratory techniques to characterize cement-based materials. • Perform mix design and engineering properties of special concretes such as high-performance concrete, self-compacting concrete, and fibre reinforced concrete. 								
Unit: I	Cement					No. of Classes: 9		
<p>Cement: Portland cement – chemical composition – Hydration, Setting of cement – Structure of hydrated cement – Tests on physical properties – Different grades of cement. Admixtures: Types of admixtures – mineral and chemical admixtures.</p>								
Unit: II	Aggregates					No. of Classes: 9		
<p>Aggregates: Classification of aggregate – Particle shape & texture – Bond, strength & other mechanical properties of aggregate – Specific gravity, Bulk density, porosity, adsorption & moisture content of aggregate – Bulking of sand – Deleterious substance in aggregate – Soundness of aggregate – Alkali aggregate reaction – Thermal properties – Sieve analysis – Fineness modulus – Grading curves – Grading of fine, Manufactured sand and coarse Aggregates – Gap graded aggregate – Maximum aggregate size- Properties Recycled aggregate.</p>								

Unit: III	Fresh Concrete	No. of Classes: 9
<p>Fresh Concrete: Workability – Factors affecting workability – Measurement of workability by different tests – Setting times of concrete – Effect of time and temperature on workability – Segregation & bleeding – Mixing, vibration and revibration of concrete – Steps in manufacture of concrete – Quality of mixing water.</p>		
Unit: IV	Hardened Concrete, Testing of Hardened Concrete	No. of Classes: 9
<p>Hardened Concrete: Water / Cement ratio – Abram’s Law – Gel/space ratio – Gain of strength of concrete – Maturity concept – Strength in tension and compression – Factors affecting strength – Relation between compression and tensile strength - Curing.</p> <p>Testing of Hardened Concrete: Compression tests – Tension tests – Factors affecting strength – Flexure tests – Splitting tests – Pull-out test, Non-destructive testing methods – codal provisions for NDT. ELASTICITY, CREEP & SHRINKAGE – Modulus of elasticity – Dynamic modulus of elasticity – Poisson’s ratio – Creep of concrete – Factors influencing creep – Relation between creep & time – Nature of creep – Effects of creep – Shrinkage – types of shrinkage.</p>		
Unit: V	Mix Design, Special Concretes	No. of Classes: 9
<p>Mix Design: Factors in the choice of mix proportions – Durability of concrete – Quality Control of concrete – Statistical methods – Acceptance criteria – Proportioning of concrete mixes by various methods – BIS method of mix design.</p> <p>Special Concretes: Introduction to Light weight concrete – Cellular concrete – No-fines concrete – High density concrete – Fibre reinforced concrete – Polymer concrete – High performance concrete – Self compacting concrete.</p>		
<p>Text Books:</p> <ol style="list-style-type: none"> Concrete Technology by M.S. Shetty. – S. Chand & Co.; 2004 Concrete Technology by A.R. Santhakumar, 2nd Edition, Oxford university Press, New Delhi Concrete Technology by M. L. Gambhir. – Tata Mc. Graw Hill Publishers, New Delhi 		
<p>Reference Books:</p> <ol style="list-style-type: none"> Properties of Concrete by A. M. Neville – Low priced Edition – 4th edition Concrete: Micro structure, Properties and Materials – P.K. Mehta and J.M. Monteiro, Mc-Graw Hill Publishers <p>IS Codes: IS 383 IS 516 IS 10262 - 2009</p>		
<p>Web References:</p> <p>https://nptel.ac.in/courses/105/102/105102012/</p>		
<p>E-Text Books: https://www.academia.edu/38871769/CONCRETE_TECHNOLOGY_THEORY_AND_PRACTICE_Multicolour_Illustrative_Edition</p>		

CE512PE: THEORY OF ELASTICITY (Professional Elective – I)

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE512PE	PEC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
Prerequisite: Strength of Materials I & II								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> To Introduce fundamental elasticity model of deformation in rectangular and polar coordinate. To Give foundation for 2D and 3D study in solid mechanics problems. To Introduce to torsion and warping of prismatic structure 								
<p>Course Outcomes: Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> The more fundamental elasticity model of deformation should replace elementary strength of material analysis. Able to understand theory, formulate and to present solutions to a wide class of problems in 2D and 3D Acquire the foundation for advanced study in areas of solid mechanics. 								
Unit: I	Introduction					No. of Classes: 9		
Introduction: Elasticity - notation for forces and stress - components of stresses - components of strain - Hooks law. Plane stress and plane strain analysis - differential equations of equilibrium - boundary conditions – Strain Displacement Relations - compatibility equations - stress function.								
Unit: II						No. of Classes: 9		
Two dimensional problems in rectangular coordinates - solution by polynomials - Saint-Venants principle - determination of displacements - bending of simple beams – Simple Supported and Cantilever Beam.								

Unit: III		No. of Classes: 9
<p>Two dimensional problems in polar coordinates - stress distribution symmetrical about an axis - pure bending of curved bars - strain components in polar coordinates - displacements for symmetrical stress distributions Edge Dislocation - general solution of two-dimensional problem in polar coordinates - application to Plates with Circular Holes – Rotating Disk. Bending of Prismatic Bars: Stress function - bending of cantilever - circular cross section - elliptical cross section - rectangular cross section.</p>		
Unit: IV		No. of Classes: 9
<p>Analysis of stress and strain in three dimensions - principal stress - stress ellipsoid - director surface - determination of principal stresses Stress Invariants - max shear stresses Stress Tensor – Strain Tensor- Homogeneous deformation - principal axes of strain-rotation. General Theorems: Differential equations of equilibrium - conditions of compatibility - determination of displacement - equations of equilibrium in terms of displacements - principle of super position - uniqueness of solution - the reciprocal theorem Strain Energy.</p>		
Unit: V		No. of Classes: 9
<p>Torsion of Circular Shafts - Torsion of Straight Prismatic Bars – Saint Venants Method - torsion of prismatic bars - bars with elliptical cross sections - membrane analogy - torsion of a bar of narrow rectangular bars - solution of torsional problems by energy method - torsion of shafts, tubes, bars etc. Torsion of Rolled Profile Sections.</p>		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Theory of Elasticity by Timoshenko, McGraw-Hill Publications. 2. Theory of Plasticity by J. Chakarbarthy, McGraw-Hill Publications. 		
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Theory of Elasticity by Y.C.Fung. 2. Theory of Elasticity by Gurucharan Singh. 		
<p>Web References:</p>		
<p>E-Text Books:</p>		

CE513PE: ROCK MECHANICS (Professional Elective – I)

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE513PE	PEC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
Prerequisite:								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> Identify the classification of Rocks as per engineering aspects Explain the basic laboratory in-situ tests, strengths and its responses Understand Rock slopes and its failures, underground and open excavations and its requirements. 								
<p>Course Outcomes: Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> Able to determine the required rock properties and classify rock mass Determination of bearing capacity of rocks, Checking the stability of slopes, and design underground and open excavation. The students will be able to predict strength of rock mass with respect to various Civil Engineering applications. 								
Unit: I	Engineering Classification of Rocks					No. of Classes: 9		
<p>Engineering Classification of Rocks: Classification of intact rocks, Rock mass classifications, Rock Quality Designation (RQD), Rock Structure Rating (RSR), Rock Mass Rating (RMR), Norwegian Geotechnical Classification (Q-system), Strength and modulus from classifications, Classification based on strength & modulus and strength and fracture strain, Geoenvironmental classification.</p>								
Unit: II	Laboratory and In-Situ Testing of Rocks					No. of Classes: 9		
<p>Laboratory and In-Situ Testing of Rocks: Physical properties, Compressive strength, Tensile strength, Direct shear test, Triaxial shear test, Slake durability test, Schmidt rebound hardness test, Sound velocity test, In-Situ Tests: Seismic methods, Electrical resistivity method, In situ stresses, Plate loading test, Goodman jack test, Plate jacking test, In-situ shear test, Field permeability test.</p>								

Unit: III	Strength, Modulus and Stresses-Strain Responses of Rocks	No. of Classes: 9
<p>Strength, Modulus and Stresses-Strain Responses of Rocks: Factors influencing rock response, Strength criteria for isotropic intact rocks, Modulus of intact rocks, effect of confining pressure, Uniaxial Compressive strength, Strength criteria for intact rocks, Strength due to induced anisotropy in rocks,. Stress Strain Models: Constitutive relationships, Elastic, Elasto-plastic, Visco-elastic, Elasto- viscoplastic stress-strain models.</p>		
Unit: IV	Introduction to Rock Slopes	No. of Classes: 9
<p>Introduction to Rock Slopes: Introduction to Rock slopes, Modes of failure, Rotational failure, Plane failure, Design charts, Wedge method of analysis, Buckling failure, Toppling failure, Improvement of slope stability and protection.</p>		
Unit: V	Underground and Open Excavations	No. of Classes: 9
<p>Underground and Open Excavations: Blasting operational planning, Explosive products, Blast Design, Underground blast design, Controlled blasting techniques, blasting damage and control, Safe practice with explosives and shots.</p>		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Goodman – Introduction to Rock mechanics, Willey International 2. Ramamurthy, T. - Engineering in Rocks for slopes, foundations and tunnels, Prentice Hall of India (2007). 		
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Jaeger, J. C. and Cook, N. G. W. – Fundamentals of Rock Mechanics, Chapman and Hall, London. (1979) 2. Hoek, E. and Brown, E. T. - Underground Excavation in Rock, Institution of Mining and Metallurgy, 1982. 3. Brady, B. H. G. and Brown, E. T. - Rock Mechanics for Underground Mining, Chapman & Hall, 1993. 		
<p>Web References:</p>		
<p>E-Text Books:</p>		

SM505MS: ENGINEERING ECONOMICS AND ACCOUNTANCY

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
SM505MS	HSMC	L	T	P	C	CIA	SEE	Total
		2	0	0	2	30	70	100
Contact Classes: 30	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 30			
Prerequisite: -								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> To prepare engineering students to analyze cost/ revenue/ financial data and to make economic and financial analysis in decision making process and to examine the performance of companies engaged in engineering. 								
<p>Course Outcomes: Upon completion of this course, students should be able to:</p> <p>To perform and evaluate present and future worth of the alternate projects and to appraise projects by using traditional and DCF Methods. To carry out cost benefit analysis of projects and to calculate BEP of different alternative projects.</p>								
Unit: I	Introduction to Engineering Economics					No. of Classes: 6		
<p>Introduction to Engineering Economics- Basic Principles and Methodology of Engineering Economics– Fundamental Concepts- Demand – Demand Determinants - Law of Demand- Demand Forecasting and Methods- Elasticity of Demand- Theory of Firm – Supply- Elasticity of Supply.</p>								
Unit: II	Macroeconomic Concepts					No. of Classes: 6		
<p>Macroeconomic Concepts: National Income Accounting - Methods of Estimation- Various Concepts of National Income - Inflation – Definition – Causes of Inflation and Measures to Control Inflation - New Economic Policy 1991 (Industrial policy, Trade policy, and Fiscal policy) Impact on Industry.</p>								

Unit: III	Cash Flows and Capital Budgeting	No. of Classes: 6
Cash Flows and Capital Budgeting: Significance of Capital Budgeting - Time Value of Money- Choosing between alternative investment proposals- Methods of Appraisal Techniques- Pay Back Period - Average Rate of Return – Net Present Value- Internal Rate of Return – Profitability Index.		
Unit: IV	Borrowings on Investment	No. of Classes: 6
Borrowings on Investment: Equity Vs Debt Financing- Leverages- Concept of Leverage- Types of Leverages: Operating Leverage- Financial Leverage and Composite Leverage. (Simple Problems)		
Unit: V	Introduction to Accounting	No. of Classes: 6
Introduction to Accounting: Accounting Principles- procedure- Double entry system - Journal- ledger- Trial balance- Trading and Profit and Loss account- Balance Sheet. Cost Accounting, Introduction- Classification of costs- Breakeven Analysis, Meaning and its application, Limitations. (Simple Problems).		
Text Books:		
<ol style="list-style-type: none"> 1. Henry Malcom Steinar-Engineering Economics, Principles, McGraw Hill Pub. 2. D.D. Chaturvedi, S.L. Gupta, Business Economics - Theory and Applications, International Book House Pvt. Ltd. 2013. 3. Jain and Narang” Accounting, Kalyani Publishers. 4. Arora, M.N.” Cost Accounting, Vikas Publication. 5. S. N. Maheshwari, Financial Management, Vikas Publishing House. 6. Zahid A Khan, Arshad N Siddique, et.al, Principles of Engineering Economics with Applications, 2e, Cambridge University Press. 		
Web References:		
<ul style="list-style-type: none"> • https://www.brainkart.com/subject/Engineering-Economics-and-Financial-Accounting_150/ • https://www.accounting.com/resources/basic-accounting-terms/ • https://www.toppr.com/guides/principles-and-practice-of-accounting/meaning-and-scope-of-accounting/meaning-of-accounting/ 		
E-Text Books:		
<ul style="list-style-type: none"> • https://books.google.co.in/books?id=VLENC6v6xWMC&printsec=frontcover#v=onepage&q&f=false • http://sibsagarpolytechnic.co.in/classnote/ENGINEERING_ECONOMICS.pdf • https://www.studypool.com/documents/4716711/engineering-economics-accountancy-intuh-r18- 		

**CE506PC: HIGHWAY ENGINEERING & CONCRETE TECHNOLOGY
LAB**

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE506PC	PCC	L	T	P	C	CIA	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes: 0	Tutorial Classes: 0	Practical Classes: 45			Total Classes: 45			
Prerequisite: Building Materials, Concrete Technology, Highway Materials								
<p>Course Objectives: The objectives of the course are to:</p> <ul style="list-style-type: none"> • To learn laboratory tests and their procedures cement, fine aggregate, coarse aggregates and bitumen • To Evaluate fresh concrete properties • To Understand the test procedures for characterization of Concrete and bituminous mixes. 								
<p>Course Outcomes: Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Categorize the test on materials used Civil Engineering Building & Pavement constructions • To perform the tests on concrete for its characterization. • To Design Concrete Mix Proportioning by Using Indian Standard Method. • Examine the tests performed for Bitumen mixes. • To prepare a laboratory report. 								
I	Test on Cement					No. of Classes: 9		
<ol style="list-style-type: none"> 1. Normal Consistency and fineness of cement. 2. Initial setting time and final setting time of cement. 3. Specific gravity of cement 4. Soundness of cement 5. Compressive strength of cement 6. Workability test on concrete by compaction factor, slump and Vee-bee. 								
II	Test on Aggregates (Coarse and Fine)					No. of Classes: 9		
<ol style="list-style-type: none"> 1. Specific gravity (Pycnometer and wire basket), water absorption 2. Shape (Flakiness and elongation indices) 3. Impact and abrasion value tests 4. Crushing resistance and durability tests 5. Sieve Analysis and gradation charts (Job mix formula using Rothfuch's charts) 6. Bulking of sand, Bulk and compact densities of fine and coarse aggregates. 								

III	Test on Fresh Concrete	No. of Classes: 9
<ol style="list-style-type: none"> 1. Slump test 2. CF (compact factor stress) 3. Vee-bee Test 4. Flow Table Test. 		
IV	Test on hardened concrete	No. of Classes: 9
<ol style="list-style-type: none"> 1. Compression test on cubes & Cylinders 2. Flexure test 3. Split Tension Test 4. Modulus of Elasticity. 		
V	Tests on Bitumen and Bituminous concrete	No. of Classes: 9
<ol style="list-style-type: none"> 1. Penetration, softening point and spot test 2. Ductility, Elastic recovery and viscosity 3. Flash and fire points and specific gravity 4. Marshall's Stability (sample preparation and testing for stability and flow values) 		
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Concrete Manual by M.L. Gambhir, Dhanpat Rai & Sons 2. Highway Material Testing manual, Khanna, Justo and Veeraraghavan, Nemchand Brothers. 		
<p>IS CODES :</p> <ol style="list-style-type: none"> 1. IS 10262 :2009 "Concrete Mix Proportioning – Guidelines" 2. IS 516:2006 "Methods of Tests on Strength of Concrete" 3. IS 383 :1993 "Specification For Coarse And Fine Aggregates From Natural Sources For Concrete" 4. IS 1201 -1220 (1978) "Methods for testing tars and bituminous materials" 5. IRC SP 53 -2010 "Guidelines on use of modified bitumen" 6. MS-2 Manual for Marshalls Mix design 2002. 		
<p>Web References:</p> <p>https://nptel.ac.in/courses/105/108/105108077/</p>		
<p>E-Text Books:</p> <p>https://www.academia.edu/38871769/CONCRETE_TECHNOLOGY_THEORY_AND_PRACTICE_Multicolour_Illustrative_Edition</p>		

CE507PC: GEOTECHNICAL ENGINEERING LAB

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
CE507PC	PCC	L	T	P	C	CIA	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes: 0	Tutorial Classes: 0	Practical Classes: 45			Total Classes: 45			
Prerequisite: Geotechnical Engineering Theory, Soil Mechanics (Co-requisite)								
Course Objectives								
<ul style="list-style-type: none"> To obtain index and engineering properties of locally available soils, and to understand the behavior of these soil under various loads. 								
Course Outcomes: At the end of the course, the student will be able to Classify and evaluate the behavior of the soils subjected to various loads.								
Experiment	List of Experiments						No. of Classes	
1	Atterberg Limits (Liquid Limit, Plastic Limit, and shrinkage limit)						5	
2	Field density by core cutter method and Field density by sand replacement method						5	
3	Determination of Specific gravity of soil Grain size distribution by sieve analysis						5	
4	Permeability of soil by constant and variable head test methods						5	
5	Standard Proctor's Compaction Test						5	
6	Determination of Coefficient of consolidation (square root time fitting method)						4	
7	Unconfined compression test						4	
8	Direct shear test						4	
9	Vane shear test						4	
10	Differential free swell index (DFSI) test						4	
Reference: 1 Measurement of Engineering Properties of Soils by. E. Saibaba Reddy & K. Rama Sastri, NewAge International.								

EN508HS: ADVANCED ENGLISH COMMUNICATION SKILLS LAB

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
EN508HS	HSMC	L	T	P	C	CIA	SEE	Total
		0	0	2	1	30	70	100
Contact Classes: 0	Tutorial Classes:0	Practical Classes: 30			Total Classes: 30			
I	INTRODUCTION					No. of Classes: 6		
<p>The introduction of the Advanced Communication Skills Lab is considered essential at 3rd year level. At this stage, the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalized context.</p> <p>The proposed course should be a laboratory course to enable students to use 'good' English and perform the following:</p> <ul style="list-style-type: none"> • Gathering ideas and information to organize ideas relevantly and coherently. • Engaging in debates. • Participating in group discussions. • Facing interviews. • Writing project/research reports/technical reports. • Making oral presentations. • Writing formal letters. • Transferring information from non-verbal to verbal texts and vice-versa. • Taking part in social and professional communication. 								
II	Objectives					No. of Classes: 6		
<p>This Lab focuses on using multi-media instruction for language development to meet the following targets:</p> <ul style="list-style-type: none"> • To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts. • Further, they would be required to communicate their ideas relevantly and coherently in writing. • To prepare all the students for their placements 								

III	Syllabus	No. of Classes: 6
<p>The following course content to conduct the activities is prescribed for the Advanced English Communication Skills (AECS) Lab:</p> <ol style="list-style-type: none"> 1. Activities on Fundamentals of Inter-personal Communication and Building Vocabulary - Starting a conversation – responding appropriately and relevantly – using the right body language – Role Play in different situations & Discourse Skills- using visuals - Synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, business vocabulary, analogy, idioms and phrases, collocations & usage of vocabulary. 2. Activities on Reading Comprehension –General Vs Local comprehension, reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading& effective googling. 3. Activities on Writing Skills – Structure and presentation of different types of writing – <i>letter writing/Resume writing/ e-correspondence/Technical report writing/</i> – planning for writing – improving one’s writing. 4. Activities on Presentation Skills – Oral presentations (individual and group) through JAM sessions/seminars/<u>PPTs</u> and written presentations through posters/projects/reports/ 5. Activities on Group Discussion and Interview Skills – Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and organization of ideas and rubrics for evaluation- Concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele-conference & video-conference and MockInterviews 		
IV	Minimum Requirement	No. of Classes: 6
<p>The Advanced English Communication Skills (AECS) Laboratory shall have the following infrastructural facilities to accommodate at least 35 students in the lab:</p> <ul style="list-style-type: none"> • Spacious room with appropriate acoustics. • Round Tables with movable chairs • Audio-visual aids • LCD Projector • Public Address system • P – IV Processor, Hard Disk – 80 GB, RAM–512 MB Minimum, Speed – 2.8 GHZ • T. V, a digital stereo & Camcorder • Headphones of High quality. 		
V	Suggested Software	No.of Classes: 6
<p>The software consisting of the prescribed topics elaborated above should be procured and used.</p> <ul style="list-style-type: none"> • Oxford Advanced Learner’s Compass, 7th Edition • DELTA’s key to the Next Generation TOEFL Test: Advanced Skill Practice. • Lingua TOEFL CBT Insider, by Dream tech • TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS) 		

Text Books:

1. Effective Technical Communication by M Asharaf Rizvi. McGraw Hill Education (India) Pvt. Ltd. 2nd Edition
3. Academic Writing: A Handbook for International Students by Stephen Bailey, Routledge, 5th Edition.

References:

1. Learn Correct English – A Book of Grammar, Usage and Composition by Shiv K. Kumar and Hemalatha Nagarajan. Pearson 2007
2. Professional Communication by Aruna Koneru, McGraw Hill Education (India) Pvt. Ltd, 2016.
3. Technical Communication by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.
4. Technical Communication by Paul V. Anderson. 2007. Cengage Learning pvt. Ltd. New Delhi.
5. English Vocabulary in Use series, Cambridge University Press 2008.
6. Handbook for Technical Communication by David A. McMurrey & Joanne Buckley. 2012. Cengage Learning.
7. Communication Skills by Leena Sen, PHI Learning Pvt Ltd., New Delhi, 2009.
8. Job Hunting by Colm Downes, Cambridge University Press 2008. English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata McGraw-Hill 2009

Web References:

E-Text Books:

***MC509: INTELLECTUAL PROPERTY RIGHTS**

B.Tech. III Year I Semester								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
*MC509	MC	L	T	P	C	CIA	SEE	Total
		3	0	0	0	30	70	100
Contact Classes: 45	Tutorial Classes: 0	Practical Classes: 0			Total Classes: 45			
I	INTRODUCTION					No. of Classes: 9		
Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.								
II	Trade Marks					No. of Classes: 9		
Trade Marks: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting, and evaluating trade mark, trade mark registration processes.								
III	Law of copy rights					No. of Classes: 9		
Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law. Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer.								
IV	Trade Secrets					No. of Classes: 9		
Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation. Unfair competition: Misappropriation right of publicity, false advertising.								
V	New development of intellectual property					No. of Classes: 9		
New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits. International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.								
<p>Text & Reference Books:</p> <ol style="list-style-type: none"> 1. Intellectual property right, Deborah. E. Bouchoux, Cengage learning. 2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, TataMcGraw Hill Publishing company ltd. 								