ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY

Guwahati

Course Structure and Syllabus

CIVIL ENGINEERING (CE)

Semester VII / CE / B.TECH

Sl. No.	Subject Code	Subject	Hrs/week			Credits
			L	T	P	C
Theory						
1	CE131701	Design of Structures-III	3	2	0	4
2	CE131702	Environmental Engineering-II	3	0	0	3
3	CE131703	Geotechnical Engineering-II	3	0	0	3
4	CE131704	Quantity Survey and Estimation	3	0	0	3
5	CE1317E01	Elective-I (Departmental)	3	0	0	3
6	HS1317E02	Elective-II (Humanities)	2	0	0	2
Practical						
7	CE131711	Design of Structures-III Lab	0	0	2	1
8	CE131712	Environmental Engineering-II Lab	0	0	2	1
9	CE131717	Project-1	0	0	8	4
10	CE131721	Seminar on Summer Training	0	0	0	1
Total			17	2	12	**25**
Total Contact Hours : 31						
Total Credit : 25						

Elective-I Subjects		
Sl. No.	**Subject Code**	**Subject**
1	CE1317E011	Advanced Engineering Geosciences
2	CE1317E012	Open Channel Flow
3	CE1317E013	Solid Waste Management
4	EE1317E014	Optimization Techniques
5	CE1317E015	Prestressed Concrete
6	CE1317E016	Flood Management and River Engineering
7	CE1317E017	Any other subject offered from time to time with the approval of the university

Elective-II Subjects		
Sl. No.	**Subject Code**	**Subject**
1	HS1317E021	Value Education, Human Rights and Legislative Procedure
2	HS1317E022	Values and Ethics in Profession
3	HS1317E023	Organizational Behaviour
4	HS1317E024	International Business and Intellectual Property Rights
5	HS1317E025	Any other subject offered from time to time with the approval of the University

Course Title : DESIGN OF STRUCTURES-III
Course Code: CE131701
L-T-P-C: 3-2-0-4

Class Hours/week	4
Expected weeks	12
Total hrs. of classes	36+12 = 48

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**PRESTRESSED CONCRETE**	Analysis of stress concept, concrete tendon placed at an eccentricity, tendon with parabolic profile, load balancing method. Losses of prestress.	10
2	**R.C.C DESIGN**	**Buildings:** I.S. specifications for loadings, stair cases, Multi-bay multi storey frame. **Water Tank:** Circular and rectangular tanks resting on ground, Overhead rectangular tanks. Design for torsion in beams	15
3	**STEEL DESIGN**	**Elevated steel water tank:** Rectangular pressed steel tank, staging and footing. Plate girder and Gantry girder. Tubular structures**:** Behaviour of tubular sections, combined stresses connections.	15
4	**INDUSTRIAL BUILDINGS**	Elements of an industrial building, structural framing, Bracing.	8
		TOTAL	**48**

RECOMMENDED BOOKS:

1. Design of R.C.C structures: Dr N Subramanian Oxford University Press.
2. Limit State Design of R.C.C Structures, A.K. Jain, Nemchand Brothers.
3. Design of RCC, N.Krishnaraju, CBS Publishers.
4. Reinforced concrete design, S.U. Pillai and Devdas Menon Tata McGraw Hill.
5. Design of R.C.C structures; Ramamurtham; DhanpatRai Publishing Co.

Course Title : ENVIRONMENTAL ENGINEERING-II
Course Code: CE131702
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**SEWAGE**	Domestic and Storm water, Quantity, Sewage flow variations. Conveyance of sewage- Sewers, design parameters, operation and maintenance of sewers, Sewage pumping; Sewerage, Sewer appurtenances, Design of sewerage systems. Storm Water Quantification and design of Storm water; Sewage and Sullage, Pollution due to improper disposal of sewage, Characteristics of sewage: composition, chemistry of sanitary sewage, B.O.D., C.O.D., aerobic and anaerobic decomposition.	8
2	**SEWAGE DISPOSAL**	Discharge of raw and treated sewage on land and water, standards for disposal of raw and treated sewage on land and water, limits of dilution. **Self purification of streams:** oxygen economy, sewage farming. **Sewage treatment:** aims, methods of treatment and various flow-sheets for preliminary, primary, secondary and tertiary treatment, screens, grit chambers, primary and secondary clarifiers, disposal of screenings and grit. Biological treatment methods; principles, trickling filter operation, re-circulation, activated sludge process, sludge volume index, stabilization ponds.	8
3	**SLUDGE DIGESTION**	Principles of anaerobic digestion, quantity and characterizations of sludge, design of sludge digestion tanks, disposal of digested sludge, drying beds.	5
4	**LOW COST SANITATION**	Septic tanks and Anaerobic Filter - principles, operation and suitability, design values, disposal of treated effluent.	6
5	**TERTIARY TREATMENT METHODS**	General description.	3
6	**BUILDING PLUMBING**	Introduction to various types of home plumbing systems for water supply and waste water disposal, high rise building plumbing, Pressure reducing valves, Break pressure tanks, Storage tanks, Building drainage for high rise buildings, various kinds of fixtures and fittings used.	6
		TOTAL	**36**

RECOMMENDED BOOKS:

1. Water Supply and Sanitary Engineering, S.K.Hussain.
2. Manual on Sewerage and Sewage Treatment and Manual on Water Supply and Treatment, Ministry of Works.
3. CPHEEO Manual on Water supply and treatment.
4. CPHEEO Manual on Sewerage and sewage treatment.
5. Water Supply Engineering., Dr.B.C.Punmia, Ashok Kumar Jain,Arun Kumar Jain; Laxmi Publications (P) Ltd..
6. Metcalf & Eddy, Wastewater Engineering- Treatment and Reuse (Revised by G.Tchobanoglous, F. L. Burton and H. D. Stensel), Tata McGraw Hill, 4thEdn.

Course Title : GEOTECHNICAL ENGINEERING-II
Course Code: CE131703
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**LATERAL EARTH PRESSURE**	Active and passive states, earth pressure at rest, effect of wall movement of earth pressure, Rankine's theory &Coulomb's theory of earth pressure for cohesive and cohesionless soils, Culmann's Graphical method.	4
2	**SHALLOW FOUNDATIONS**	General requirements of foundation, location and depth of foundation, important terms regarding bearing capacity, Terzaghi's theory, Meyerhof's theory, Effect of water table and eccentricity on bearing capacity, computation of bearing capacity by IS code method, determination of allowable bearing pressure, settlement of shallow foundations, corrections to settlement due to consolidation, Plate load test (IS 1888-1982).	8
3	**STRESS DISTRIBUTION**	Boussinesqequations, vertical stress distribution diagrams, Newmark's influence chart, Equivalent point load method, Westergaard's equation, contact pressure.	4
4	**PILE FOUNDATION**	Load carrying capacity of piles, Static pile load formulae, Dynamic pile formulae, Group action of piles, negative skin friction, Pile load test (Initial, Pull-out)IS code 2911 pt 4 method.	4
5	**WELL FOUNDATION**	Types of wells, components of a well foundation, Depth of a well foundation.	3
6	**MACHINE FOUNDATION**	Types of machine foundation, important terms related to machine foundation, design criteria, Degrees of freedom of a block foundation.	3
7	**SOIL EXPLORATION**	Methods of soil exploration, methods of boring, soil samplers and sampling, depth of exploration, standard penetration test, static cone penetration test, dynamic cone test, borehole log.	4
8	**GROUND IMPROVEMENT TECHNIQUES**	Removal & replacement, precompression, vertical sand drains, dynamic compaction, vibroflotation, stone columns, soil grouting, blast densification, soil nailing, micropiles, definition and functions of geotextiles.	6
		TOTAL	**36**

REFERENCES:

1. Basic and applied soil mechanics-Gopal Ranjan & A.S.R Rao.
2. Soil Mechanics and Foundation-Dr. B.C Punmia, Ashok Kumar Jain, Arun Kumar Jain.
3. Foundation Analysis and Design-J.E BOWLES, McGraw Hills Education(India) Pvt. Ltd.

Course Title : QUANTITY SURVEY AND ESTIMATION
Course Code: CE131704
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**INTRODUCTION**	Principles of Estimating, Purpose and types of estimates, Standard methods of estimation.	2
2	**SPECIFICATION OF WORK**	Aims of specification, Types, Method of preparation, Detailed specification of some important items, Use of IS and IRC codes and special publications.	3
3	**RATE ANALYSIS**	Purpose and importance, Factors affecting Rate Analysis, Examples.	2
4	**SCHEDULE OF RATES**	Importance of schedule, Schedule of Rates for important item-such as-Earth work, Carriage, Concrete, Brick work, Wood work, Steel work etc., Use of APWD Schedule of Rates, Introduction to CPWD schedule of rates.	3
5	**BUILDING ESTIMATE**	Estimate of Single Storied Building (sloped roof & R.C.C.) and its important components.	8
6	**ROAD ESTIMATE**	Earthwork Calculation, Estimate for a New Road.	3
7	**SANCTION**	Bills of Quantities, Administrative approval, expenditure sanction, technical sanction, introduction to DPR (Detailed Project Report)	2
8	**BASIC KNOWLEDGE OF VALUE**	Market value, rent, ground rent, secured, unsecured, interest, present value, reversionary value, etc.	3
9	**RENTAL METHOD OF VALUATION**	Cross rent, net rent, rack rent, security, year's purchase, annual sinking fund, salary or premium.	4
10	**LAND AND BUILDING METHODS OF VALUATIONS**	Factors affecting value of lands, an introduction to various methods of valuation of buildings, Depreciation, Comparison of land value by Belting method.	6
		TOTAL	36

REFERENCES:

1. Estimating and costing in civil engineering-Theory& Practice by B. N. Dutta, UBS publishers.
2. Different IRC and IS codes, IRC-37, APWD SOR, CPWD SOR.
3. Estimation and Costing by Chakravarty.

Course Title : ELECTIVE-I (Departmental)
Course Code: CE1317E011
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

ADVANCED ENGINEERING GEOSCIENCES

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**FORMATION OF SOIL**	Weathering of rocks – types, controlling factors, stages.	3
		Geomorphological processes, rock cycle.	2
		Soil profile.	2
2	**SOIL MINERALOGY**	Crystalline & Non-crystalline clay minerals, Non-clay minerals, Kaolinite, Illite and Montmorillonite.	2
		Process of formation of clay minerals.	2
		Engineering properties of clay minerals.	1
		Soil Fabric and its types.	1
		Influence of soil structure, soil fabric and volume change on properties of soil.	1
		Diffused double layer theory.	1
		Cation exchange Capacity.	1
		Complexity of soil nature.	1
3	**SOIL DEPOSITS**	Types of soil and soil deposits.	2
		Soil deposits of India with special emphasis on the Northeast India.	2
4	**SOIL EROSION**	Definition, Types.	2
		Prevention and Control.	2
5	**ROCK MECHANICS**	Engineering properties of rocks.	2
		Defects in rock masses.	3
		Engineering classification of Rocks.	2
		Rock Quality Designation, Core Recovery, Modified Core recovery, Numerical Problems on Core log.	2
		Improvement in properties of rock mass – Grouting, Guniting, Bolting.	2
		TOTAL	**36**

TEXTBOOK:

1. Rock Mechanics by B.P. Verma.
2. Fundamentals of Soil Mechanics by J. Mitchell.

Course Title : ELECTIVE-I (Departmental)
Course Code: CE1317E012
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

OPEN CHANNEL FLOW

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**OPEN CHANNEL FLOW**	• Kinds of open channel flow, channel geometry, types and regimes of flow. • Velocity distribution in open channel, Numericals, wide open channel, specific energy, critical flow and its computation. • Energy in non-prismatic channel, momentum in open channel flow, specific force.	6
2	**UNIFORM FLOW IN RIGID – BOUNDARY CHANNELS**	• Qualification of uniform flow, velocity measurement, Manning's and Chezy's formula, determination of roughness coefficients& Boundary shear stress. • Determination of normal depth and velocity, most economical sections, channel conveyance, section factor – curves for rectangular and trapezoidal channels, flow in a circular channel, relation between conveyance and depth. Numericals. • Flow in a channel section with composite roughness.	9
3	**DESIGN OF CHANNELS**	• Rigid – boundary channels, non-scouring erodible boundary channels, alluvial channels, free board in channels, Numericals.	3
4	**ENERGY DEPTH RELATIONSHIP**	• Specific energy, critical depth, specific energy curve, critical depth computation, control section, application of specific energy and critical depth concepts. Numericals, Channel transitions.	4
5	**GRADUALLY VARIED FLOW**	• Governing equation and its limitations, water surface profiles – classification and characteristics; • Dynamic equations of gradually varied flow, assumptions and characteristics of flow profiles, classification of flow profile, draw down and back water curves • Profile determination, graphical integration, direct step and standard step method.	8

6	**HYDRAULIC JUMP**	• Types of jump, hydraulic jump in horizontal and sloping rectangular channels, location and length of jump on horizontal floor, Numericals, Energy loss and application of hydraulic jump.	6
		TOTAL	**36**

RECOMMENDED BOOKS:

1. Flow through open channel – Rajesh Srivastava, Oxford higher education publication.
2. Flow through open channels- K. Subramanya, Mac Graw Hill Publication.
3. Open channel flow – Madan Mohan Das, Easter economy edition publication.
4. Open channel flow- Hubert Chanson.

Course Title : ELECTIVE-I (Departmental)
Course Code: CE1317E013
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

SOLID WASTE MANAGEMENT

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**MUNICIPAL SOLID WASTE (MSW)**	Municipal Solid Waste (MSW), Sources of Municipal Solid Waste, Factors affecting generation of Solid Waste, Effects of Improper Disposal of Solid Waste.	10
2	**COLLECTION, TRANSFER AND STORAGE**	Method of Collection, Types of Vehicles, Selection of Site for Disposal, On Site Segregation of Solid Waste, Operation and Maintenance.	10
3	**OFF-SITE PROCESSING AND DISPOSAL**	Processing techniques and Equipment, Recovery from Solid Waste-Composting, Incineration, Dumping of Municipal Solid Waste, Landfill, Criteria for Landfill Site Selection, Components of a Landfill, Leachate Collection and Treatment.	10
4	**HAZARDOUS WASTE**	Hazardous Waste, Characteristics of Hazardous Waste, Household Hazardous Waste, Household Hazardous Products, Disposal of Hazardous Waste.	6
		TOTAL	**36**

TEXTBOOKS:

1. Solid Waste Management by K. Sasikumar and SanoopGopi Krishna; PHI Learning Pvt. Ltd.
2. Solid and Hazardous Waste Management by M.N. Rao and Razia Sultana; BS Publications.
3. Waste Management and Treatment by N.K. Sharma; Ancient Publishing House.

Course Title : ELECTIVE-I (Departmental)
Course Code: EE1317E014
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

OPTIMIZATION TECHNIQUES

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**INTRODUCTION TO OPTIMIZATION**	Introduction, Historical development, Engineering Application of Optimization, Statement of an Optimization problem-Design Vector, Design Constraints, Constraint Surface, Objective Function Surfaces. Classification of Optimization Problems, Optimization techniques, Engineering Optimization Literature. Problems.	8
2	**CLASSICAL OPTIMIZATION TECHNIQUES**	Introduction, single variable Optimization, multi-variable Optimization with no constraints, multivariable Optimization with equality constraints, multivariable Optimization with inequality constraints, convex programming problems.	7
3	**LINEAR PROGRAMMING I: SIMPLEX METHOD**	Introduction, Application of Linear Programming, Standard form of a Linear Programming Problem, Geometry of a Linear Programming Problems, Definitions and Theorem, Solution of a system of Linear simultaneous equation, Pivotal reduction of a general system of equation, motivation of the simplex method, Simplex algorithm, two phases of the simplex method.	7
4	**LINEAR PROGRAMMING II: ADDITIONAL TOPICS AND EXTENSIONS**	Revised simplex method, duality in linear programming, decomposition principle, sensitivity or postoptimality analysis, Transportation problem, Karmarkar's Method, quadratic programming.	7
5	**NON-LINEAR PROGRAMMING: ONE DIMENSIONAL MINIMIZATION METHODS**	Introduction, unimodal function, Unrestricted search, exhaustive search, dichotomous search, Interval Halving method, Fibonacci method.	7
		TOTAL	**36**

TEXTBOOKS/REFERENCES:

1. Optimization Theory and Application – SS Rao, Wiley Eastern Ltd, 3rd edition.
2. Optimization Techniques-Chander Mohan, Kusum Deep, New Age Science.
3. Optimization Techniques-Paban Kumar Oberoi, Global Vision Publishing House.
4. Computer based Optimization Techniques-Tanweer Alam- A.B.Publications.
5. Operation Research-An Introduction-TAHA H A,Prentice Hall.

Course Title : ELECTIVE-I (Departmental)
Course Code: CE1317E015
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

PRESTRESSED CONCRETE

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**PRESTRESSED CONCRETE**	Introduction, Prestressed systems, Pre-tensioned and post tensioned members, Analysis, Losses in Prestressed concrete, Pressure line, Load balancing concept, Factors influencing deflection, Analysis and design of statically determinate prestressed concrete structure for flexure and shear, Statically indeterminate beams.	8
2	**ELEMENTS OF PRESTRESSED CONCRETE**	Analysis of stress concept, concrete tendon placed at an eccentricity, tendon with parabolic profile, load balancing method. Losses of prestress, I.S. specifications analysis and design of prestressed concrete beams – rectangular, I – section, T – section for flexure and shear, Design of end block.	10
3	**DESIGN OF PRESTRESSED CONCRETE STRUCTURES**	Design of flexural members, Design for Shear, bond and torsion. Design of End blocks and their importance.	6
4	**CONTINUOUS BEAMS**	Application of prestressing in continuous beams, concept of linear transformation, concordant cable profile and cap cables.	6
5	**DESIGN OF SPECIAL STRUCTURES**	Special structures like prestressed folded plates, prestressed cylindrical shells, prestressed concrete poles.	6
		TOTAL	36

RECOMMENDED BOOKS:

1. Prestressed Concrete by Krishna Raju, Tata McGraw Hill Publishing Co. 2nd Edition.
2. Fundamentals of Prestressed Concrete by N.C.Sinha & S.K.Roy S.Chand & Co.
3. T.Y.Lin, Design of Prestressed Concrete Structures, John Wiley and Sons, Inc.

Course Title : ELECTIVE-I (Departmental)
Course Code: CE1317E016
L-T-P-C: 3-0-0-3

Class Hours/week	3
Expected weeks	12
Total hrs. of classes	36

FLOOD MANAGEMENT AND RIVER ENGINEERING

MODULE	TOPIC	COURSE CONTENT	HOURS
FIRST HALF: FLOOD CONTROL			
1	**INTRODUCTION**	• Definition, causes and effects of flood • Incidence and extent of floods with special reference to North East region, flood damages, Dam break or Embankment breaching Flood in North East.	2
2	**FLOOD ESTIMATION**	• Rational, empirical and unit hydrograph methods; design flood, flood frequency analysis – annual series and partial duration series, probability and return period of flood, Gumbel and Log pearson distributions, flood frequency at points without stream flow records, design flood selection criteria, design storm, probable maximum flood. • Frequency series, recurrence interval, statistical methods for estimating the frequency of rare events.	8
3	**FLOOD MANAGEMENT**	• Flood damage mitigation, reduction of peak flood – reservoirs and detention basin; confinement of flow embankment, flood walls, ring bunds; reduction of peak stage – channel improvement, cut – off. • Diversion of flood water – emergency flood ways, river diversion, inter basin transfer; flood abutment – watershed management measures. • Weather modification; flood plain management land use regulations, flood plain zoning, flood proofing, flood insurance; emergency measures.	6

SECOND HALF: RIVER ENGINEERING			
4	**INTRODUCTION**	• River course – upper, middle and delta reaches; Himalayan and Peninsular rivers, principal river systems of India.	2
5	**TYPES OF RIVERS**	• Perennial, flushy and virgin rivers; incised, boulder, flood plain, delta and tidal rivers; aggrading, degrading, meandering and braided rivers.	2
6	**SEDIMENT TRANSPORT**	• Sediments – bed load, suspended load and wash load; riverbank erosion, incipient motion, mode of sediment transport – rolling, sliding, saltation and suspension; introduction to theories of sediment transport including Shield's Theory.	4
7	**REGIMES OF FLOW**	• Definition, description of regimes of flow: plane bed, ripples, dunes, transition and anti dunes; prediction of regimes of flow.	4
8	**RIVER BEHAVIOUR**	• Behaviour of rivers in straight reaches and bends, meandering – causes and general features, factors effecting meanderings, cut – off – development and effects, causes of braiding and delta formation.	4
9	**RIVER TRAINING**	• Definition, objectives, classification – high water, low water and mean water river training; • River training works – marginal embankment, spurs, guide bank, porcupines, bank pitching and revetment, cut off, pitched island, sills and bottom paneling, bundling and river training works in Assam.	4
		TOTAL	**36**

RECOMMENDED BOOKS:

1. Irrigation Engineering and hydraulic structures- S.K. Garg, Khanna Publishers.
2. Elements of water resources engineering- K.N. Duggal, J.P. Soni, New Age International Publications.
3. Irrigation Engineering and water power engineering- Dr. B.C Punmia& Dr. Pande B.B. Lal, Laxmi Publications.

Course Title : ELECTIVE-II (Humanities)
Course Code: HS1317E021
L-T-P-C: 2-0-0-2

Class Hours/week	2
Expected weeks	12
Total hrs. of classes	24

VALUE EDUCATION, HUMAN RIGHTS AND LEGISLATIVE PROCEDURE

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**VALUES AND SELF DEVELOPMENT**	Social values and individual attitudes, Work ethics, Indian vision of humanism, Moral and non moral valuation, Standards and principles, Value judgments. Importance of cultivation of values, Sense of duty, Confidence, National unity, Patriotism, Love for nature, Discipline. Devotion, Self reliance.	5
2	**PERSONALITY AND BEHAVIOUR DEVELOPMENT**	Soul and scientific attitude, Positive thinking, Integrity and discipline, Punctuality, Love and kindness, Avoiding fault finding, Free from anger, Dignity of labor, Universal brotherhood and religious tolerance, Happiness vs. suffering love for truth, Aware of self destructive habits, Association and cooperation	4
3	**CHARACTER AND COMPETENCE**	Science vs. God, Holy books vs. blind faith, Self management and good health, Science of reincarnation, Equality, Nonviolence, Humility, Role of women, All religions and same message, Mind your mind, Self control	4
4	**HUMAN RIGHTS**	Jurisprudence of human rights nature and definition, Universal protection of human rights, Regional protection of human rights, National level protection of human rights, Human rights and vulnerable groups.	5
5	**LEGISLATIVE PROCEDURES**	Indian constitution, Philosophy, fundamental rights and duties, Legislature, Executive and Judiciary, Constitution and function of parliament, Composition of council of states and house of people, Speaker, Passing of bills, Vigilance, Lokpal and functionaries.	6
		TOTAL	**24**

TEXTBOOKS:

1. Chakraborty, S.K., Values and Ethics for Organizations Theory and Practice, Oxford University Press, New Delhi
2. Kapoor, S.K., Human rights under International Law and Indian Law, Prentice Hall of India, New Delhi
3. Basu, D.D., Indian Constitution, Oxford University Press, New Delhi

REFERENCE BOOKS:

1. Frankena, W.K., Ethics, Prentice Hall of India, New Delhi.
2. Meron Theodor, Human Rights and International Law Legal Policy Issues, Vol. 1 and 2, Oxford University Press, New Delhi.

Course Title : ELECTIVE-II (Humanities)
Course Code: HS1317E022
L-T-P-C: 2-0-0-2

Class Hours/week	2
Expected weeks	12
Total hrs. of classes	24

VALUES AND ETHICS IN PROFESSION

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**EFFECTS OF TECHNOLOGICAL GROWTH**	Rapid Technological growth and depletion of resources, Reports of the Club of Rome. Limits of growth: sustainable development **Energy Crisis:** Renewable Energy Resources Environmental degradation and pollution. Eco-friendly Technologies. Environmental Regulations, Environmental Ethics Appropriate Technology Movement of Schumacher; later developments Technology and developing notions. Problems of Technology transfer, Technology assessment impact analysis. Human Operator in Engineering projects and industries. Problems of man, machine, interaction, Impact of assembly line and automation. Human centered Technology.	12
2	**ETHICS OF PROFESSION**	**Engineering profession:** Ethical issues in Engineering practice, Conflicts between business demands and professional ideals. Social and ethical responsibilities of Technologists. Codes of professional ethics. Whistle blowing and beyond, Case studies.	4
3	**PROFESSION AND HUMAN VALUES**	Values Crisis in contemporary society, Nature of values: Value Spectrum of a good life **Psychological values:** Integrated personality; mental health **Societal values:** The modern search for a good society, justice, democracy, secularism, rule of law, values in Indian	8

		Constitution. **Aesthetic values:** Perception and enjoyment of beauty, simplicity, clarity. **Moral and ethical values:** Nature of moral judgments; canons of ethics; ethics of virtue; ethics of duty; ethics of responsibility.	
		TOTAL	**24**

RECOMMENDED BOOKS:

1. Stephen H Unger, Controlling Technology: Ethics and the Responsible Engineers, John Wiley & Sons, New York.
2. Deborah Johnson, Ethical Issues in Engineering, Prentice Hall, Englewood Cliffs, New Jersey.
3. A N Tripathi, Human values in the Engineering Profession, Monograph published by IIM, Calcutta.
4. Prof. (Col) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian perspective", Biztantra, New Delhi.
5. David Ermann and Michele S Shauf, "Computers, Ethics and Society", Oxford University Press.

Course Title : ELECTIVE-II (Humanities)
Course Code: HS1317E023
L-T-P-C: 2-0-0-2

Class Hours/week	2
Expected weeks	12
Total hrs. of classes	24

ORGANIZATIONAL BEHAVIOUR

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**FOCUS AND PURPOSE**	Definition, need and importance of organizational behaviour; Nature and scope; Frame work; Organizational behaviour models.	3
2	**INDIVIDUAL BEHAVIOUR**	Personality ; types ; Factors influencing personality ; Theories ; Learning ; Types of learners ; The learning process ; Learning theories – Organizational behaviour modification. Misbehaviour; Types; Management Intervention. Emotions; Emotional Labour; Emotional Intelligence, Theories. Attitudes – Characteristics, Components, Formation, Measurement, Values. Perceptions, Importance, Factors influencing perception, Interpersonal perception- Impression Management. Motivation, importance, Types, Effects on work behaviour.	5
3	**GROUP BEHAVIOUR**	Organization structure , Formation , Groups in organizations , Influence , Group dynamics , Emergence of informal leaders and working norms , Group decision making techniques , Team building , Interpersonal relations, Communication , Control.	5
4	**LEADERSHIP AND POWER**	Meaning, Importance, Leadership styles, Theories, Leaders Vs Managers, Sources of power, Power centers, Power and Politics.	5
5	**DYNAMICS OF ORGANIZATIONAL BEHAVIOUR**	Organizational culture and climate, Factors affecting organizational climate, Importance. Job satisfaction, Determinants, Measurements, Influence	6

		on behaviour. Organizational change, Importance, Stability Vs Change, Proactive Vs Reaction change, the change process, Resistance to change, Managing change. Stress, Work Stressors, Prevention and Management of stress, Balancing work and Life. Organizational development – Characteristics, objectives, Organizational effectiveness**.**	
		TOTAL	**24**

RECOMMENDED BOOKS:

1. Stephen P. Robins, Organisational Behavior, PHI Learning / Pearson Education, 11th edition.
2. Fred Luthans, Organisational Behavior, McGraw Hill, 11th Edition.
3. Hellrigal, Slocum and Woodman, Organisational Behavior, Cengage Learning, 11th Edition
4. Ivancevich, Konopaske & Maheson, Oranisational Behaviour & Management, 7th edition, TMcGraw.

Course Title : ELECTIVE-II (Humanities)
Course Code: HS1317E024
L-T-P-C: 2-0-0-2

Class Hours/week	2
Expected weeks	12
Total hrs. of classes	24

INTERNATIONAL BUSINESS AND INTELLECTUAL PROPERTY RIGHTS

MODULE	TOPIC	COURSE CONTENT	HOURS
1	**CONCEPT OF INTERNATIONAL BUSINESS**	Reason for expansion of international business. Difference from domestic business, international cultural environment, self-reference criterion and ethnocentrism.	4
2	**WORLD TRADE**	Definition and components of balance of payment, Types and cause of disequilibrium in balance of payment, Foreign exchange rate; fixed and flexible exchange rate and policy of devaluation.	10
3	**GLOBALISATION**	Meaning, case for globalization, dangers and risks of globalization, consequences of globalization for India.	4
4	**INTELLECTUAL PROPERTY**	Its origin and development; an overview, Need for protecting intellectual property, copyrights, trademarks and patent: meaning and implication, rights of patentees, International and Indian patent laws.	6
		TOTAL	**24**

RECOMMENDED BOOKS:

1. Rakesh Mohan Joshi,' International Business', Oxford University Press, 6th edition.
2. Avinash Shivade, 'Intellectual Property Manual', Lexix, Nexis.
3. B. L.Wadehra, ' Law Relating to Patent Trade Marks, copy right design and Geographical Indicators',University Law Publishing Co. Ltd.

PRACTICALS

Course Title : DESIGN OF STRUCTURES-III LAB
Course Code: CE131711
L-T-P-C: 0-0-2-1
Expected No. of weeks : 12 (approx)

EXPERIMENT NO.	AIM OF EXPERIMENT	HOURS
1	**Structural detailing to be prepared for the following:**	
	(i) Circular and Rectangular Water Tanks resting on the ground.	6
	(ii) Longitudinal spanning staircase and transversely spanning staircase.	6
	(iii) Isolated footing and combined footing.	6
	(iv) Retaining Walls.	6
	TOTAL	**24**

Course Title : ENVIRONMENTAL ENGINEERING-II LAB
Course Code: CE131712
L-T-P-C: 0-0-2-1
Expected No. of weeks : 12 (approx)

EXPERIMENT NO.	AIM OF EXPERIMENT	HOURS
1	Jar test.	3
2	Dissolved oxygen.	3
3	Chemical oxygen demand (COD).	3
4	Biochemical oxygen demand (BOD).	3
5	Most probable number (MPN).	3
	TOTAL	**15**

CE131717	**PROJECT-1**	L = 0 T = 0 P = 8 C = 4
GUIDELINES WILL BE DISTRIBUTED BY THE UNIVERSITY FROM TIME TO TIME		
CE131721	**SEMINAR ON SUMMER TRAINING**	L = 0 T = 0 P = 0 C = 1
GUIDELINES WILL BE DISTRIBUTED BY THE UNIVERSITY FROM TIME TO TIME		

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