

B.TECH CE 2018-2022												
SEMESTER VIII												
S.No.	CATEGORY	CODE	COURSE TITLE	Periods			Evaluation Scheme				Subject Total	Credit
				L	T	P	Assignment	TA	Total	ESE		
1	PROFESSIONAL ELECTIVE VII (Select any one of the following)											
	Professional Elective Courses	PECCEEL407	Design of Concrete Structures-II	3	0	0	20	10	30	70	100	3
		PECCEEL408	Prestressed Concrete	3	0	0	20	10	30	70	100	3
		PECCEEL409	Design of Structural Systems	3	0	0	20	10	30	70	100	3
2	PROFESSIONAL ELECTIVE VIII (Select any one of the following)											
	Professional Elective Courses	PECCEEL410	Metal Structure Behaviour- II	3	0	0	20	10	30	70	100	2
		PECCEEL411	Civil Engineering Design-II	3	0	0	20	10	30	70	100	2
		PECCEEL412	Structural Dynamics	3	0	0	20	10	30	70	100	2
		PECCEEL413	Industrial Structures	3	0	0	20	10	30	70	100	2
3	OPEN ELECTIVE III (Select any one of the following)											
	Open Elective Courses	5A0EEL404	Metro Systems and Engineering	3	0	0	20	10	30	70	100	3
		5A0EEL405	Economic Policies in India	3	0	0	20	10	30	70	100	3
		5A0EEL406	Geo-informatics	3	0	0	20	10	30	70	100	3
4	OPEN ELECTIVE IV (Select any one of the following)											
	Open elective Courses	5A0EEL407	Human Values Ethics	2	0	0	20	10	30	70	100	2
		5A0EEL408	Cyber Law and Ethics	2	0	0	20	10	30	70	100	2
		5A0EEL409	Town Planning and Architecture	2	0	0	20	10	30	70	100	2
PRACTICAL /SESSIONAL												
1	Project	PROJ-CE402	Project II	0	0	12			100	100	200	6
									TOTAL		800	16

****NOTE: Qualifying Non Credit Course.**

Program: B.Tech

Semester: Eight

Course: Design of Concrete Structure II (Professional Elective VII)

Course Code: 5A0EEL407

L	T	P	C
3	0	0	3

Course Objective:

- Apply the concepts of liquid retaining structures
- Design material storage structures using various theories
- Apply the concepts of environmental and transportation structures
- Demonstrate the detailing of reinforcement
- Draw the various RCC structures

Design of Concrete Structures-II. Design of continuous beams and building frames, Moment redistribution, Estimation of wind and seismic loads, Desirable features of earthquake resistant construction, Detailing for earthquake resistant construction – ductility criteria; Water tank and staging; Introduction, Design criteria, Design of rectangular and circular water tank, Design of Intze tank, Staging for overhead tank; Introduction to bridge engineering, Investigation for bridges, IRC loadings, Design of slab culvert; Design of Masonry walls and columns; Prestressed concrete, Introduction, pre-stressing system, losses in pre-stress, Design of simple span girders, Design of end block; Design of staircases; Design of cantilever and counter-forte type retaining wall; All design steps/process to as per the most recent BIS code of practices

Prestressed Concrete. Study of strength, behavior, and design of prestressed reinforced concrete members and structures, with primary emphasis on pretensioned, precast construction; emphasis on the necessary coordination between design and construction techniques in prestressing.

Prerequisite:

Suggested Reading:

- 1. Limit State Theory & Design of Reinforced Concrete, Dr. V.L. Shah & Late Dr. S.R. Karve, Structures Publications*
- 2. Fundamentals of Reinforced Concrete, N.C. Sinha & S.K. Roy, S. Chand & Company*
- 3. Reinforced Concrete Design (IS 456-2000) Principles & Practice, N. Krishna Raju R. N. Pranesh, New Age International*
- 4. Reinforced Concrete Design, S.U.Pillai & Devdas Menon, Tata McGraw Hill.*
- 5. Limit State Design Reinforced Concrete, P.C Varghase, Prentice Hall of India*

Program: B.Tech

Semester: Eight

Course: Industrial Structures (Professional Elective VIII)

Course Code: 5A0EEL413

L	T	P	C
3	0	0	3

Course objectives:

- Calculate shape factor and plastic moment capacity
- Design eccentrically loaded compression members (Beam Columns) and their base plates
- Design welded plate girder and other components and Gantry girder
- Design light gauge steel sections

Module-1

Industrial Structures. Industrial steel building frames: Types of frames, bracing, crane girders and columns, workshop sheds, trussed bents, Pressed steel tank, circular tank;

Module-2

Transmission and Communication towers: Types and configuration, Analysis and design; Chimneys; Loads and stresses in chimney shaft, Earthquake and wind effect, Stresses due to temperature difference, combined effect of loads and temperature, temperature.

Module-3

Design of chimney; Silos and Bunkers; Jassen's theory, Airy's theory, Shallow and deep bins, rectangular bunkers with slopping bottom, rectangular bunkers with high side walls; Steel stacks; introduction, force acting on a steel stack, design consideration, design example of stacks; Concrete Shell Structures:

Module-3

Folded plate and cylindrical shell structures; Introduction, structural behavior of long and short shells, beam and arch action, analysis and design of cylindrical shell structures, Analysis and design of folded plates; Machine foundations; introduction, machine vibration, structural design of foundation to rotary machines, impact machines, vibration characteristics, design consideration of foundation to impact machine, grillage, pile and raft foundation.

Suggested Reading:

- 1. Design of Steel Structures, L.S. Negi, Tata McGraw Hill, Publication*
- 2. Design of Steel Structure, B.C. Punmia, Laxmi Publication*
- 3 Design of Steel Structures, S.K. Dug gal, Tata McGraw Hill, Publication*
- 4. Design of Steel Structures, Arya, A.S. Ajmani, J.L., Nem Chand & Bros*

Program: B.Tech

Semester: Eight

Course: Metro Systems and Engineering (Open Elective III)

Course Code: 5A0EEL404

L	T	P	C
3	0	0	3

Course objectives:

- To give an understanding to the students of the vast knowledge about numerous areas of industry available in the overall field of Civil Engineering.
- To motivate the student to pursue a career in one of the many areas of Civil Engineering with deep interest and keenness.
- To expose the students to the various avenues available for doing creative and innovative work in this field by showcasing the many monuments and inspiring projects of public utility.

Module: 1

General: Overview of Metro Systems; Need for Metros; Routing studies; Basic Planning and Financials.

Module: 2

Overview and construction methods for: Elevated and underground Stations; Viaduct spans and bridges.

Module: 3

Underground tunnels; Depots; Commercial and Service buildings. Initial Surveys & Investigations; Basics of Construction Planning & Management.

Module: 4

Construction Quality & Safety Systems. Traffic integration, multi modal transfers and pedestrian facilities.

Module: 5

Environmental and social safeguards; Track systems-permanent way. Facilities Management

Text/Reference Books:

1. *World Metro Systems* by Paul Garbutt
2. *Railway Transportation Systems: Design, Construction and Operation* by Christos N. Pyrgidis
3. *Public Transit Planning and Operation: Modeling, Practice and Behavior* by Avishai Ceder
4. *Highway engineering* by khanna and justo .

Program: B.Tech

Semester: Eight

Course: Economic Policies of India (Open Elective III)

Course Code: 5APEC-CEEL 405

L	T	P	C
3	0	0	3

Course Objective:

- The objective of this paper is to introduce the basic concepts of economics to the students so as to enable them for further learning in economics.
- The student will be able to understand the basic concepts of economics and equip oneself to understand the subject in greater detail, later semesters.

Module 1:

Development Concept and Issues in Governance

- Development Concept, State and Market, Institutions,
- Panchayati Raj Institutions – (PRIs) Non-Government Organizations (NGOs),
- Sustainable Development,
- Governance
- Economic Reforms, Plans After Reforms

Module 2:

Sectoral Development and Policy Reforms

- Financing of Infrastructure Development, Education Sector,
- Migration,
- Poverty, Inequality and Growth
- Current Status of Agriculture Input Pricing, Subsidies and Land Reforms
- Industrial Policy and Development after 1991, Public Sector Under-Takings (PSUs), Privatization and Disinvestment,

Module 3:

Policy Approaches in Fiscal, Financial and External Sector

- Fiscal and Monetary Policy Approaches, Fiscal Federalism,
- Tax Reforms, Central Government Finances
- Financial Sector Reforms, Money and Capital Market.
- Foreign Trade Liberalization, Balance of Payments, Exchange Rate Policy,
- World Trade organization (WTO) and Indian Competition Policy.

Readings List:

- Ahluwalia. I.J. and I.M.D Little (Eds.), *India's Economic Reforms and Development (Essays in Honour of Manmohan Singh)* Oxford University Press, New Delhi – 1999.
- Bardhan. P.K. (9th Edition), *the Political Economy of Development in India*, Oxford University Press, New Delhi – 1999.
- Bawa. R.S. and P.S. Rainkhy (Edi) *Structural Changes in Indian Economy*, Gurunanak Dev University Press, Amritsar.
- Brahmananda, P.R. and V.R. Panchmukhi (Edi) *Development Experience in Indian Economy, Interstate Perspectives*, Bookwell, Delhi – 2001.
- Dutt. R.(Edi), *Second Generation Economic Reforms in India*, Deep and Deep Publications, New Delhi – 2001.
- Joshi, V. and Imd Little; *India: Macro Economics and Political Economy, 1964-1991*, Oxford University Press, New Delhi – 1999.
- Appu. P.S.; *Land Reforms in India*, Vikas, New Delhi – 1996.
- Bhargawa, P.K.; *India's Fiscal Crises*, Ashish Publishing House, New Delhi – 1991.
- Brahmananda, P.R. and V.R Panchmukhi (Edi.), *the Development Process of Indian Economy*, Himalayas Publishing House, New Delhi – 1987.
- Byers. T.J. (Edi); *the Indian Economy: Major Debutes Since Independence*, Oxford University Press, New Delhi – 1998.

Program: B.Tech

Semester: Eight

Course: Geo-informatics (Open Elective III)

Course Code: 5APEC-CEEL 406

L	T	P	C
3	0	0	3

Course Objective:

- Preparation of geospatial features in computing environment
- Analyze spatial and attribute data for solving spatial problems
- Create GIS and cartographic outputs for presentation
- Understand the software/hardware requirements for implementing a GIS Project

Module 1:

Aerial Photographs- Basic terms & Definitions, scales, relief displacements, Flight Planning, Stereoscopy, Characteristics of photographic images, Fundamentals of aerial photo-interpretation

Module 2:

Physics of remote sensing, Ideal remote sensing system, Remote sensing satellites and their data products, Sensors and orbital characteristics, Spectral reflectance curves, resolution and multi-concept, FCC

Module 3:

Satellite Image - Characteristics and formats, Image histogram, Introduction to Image rectification, Image Enhancement, Land use and land cover classification system, Supervised Classification, Applications of remote sensing

Module 4:

Basic concepts of geographic data, GIS and its components, Data acquisition, Raster and Vector formats, topology and Data models, Spatial modeling, Data output, GIS Applications
Introduction Satellite navigation System, GPS- Space segment, Control segment, User segment, GPS satellite signals, Receivers, Static, Kinematic and Differential GPS

Suggested Reading:

1. *Introduction to Remote Sensing*, Campbell, J.B., Guilford Press
2. *Principles of Remote Sensing*, Curran, P.J., Longman, London
3. *Elements of Photogrammetry*, Wolf P.R., TMH
4. *Surveying Vol-III*, B.C. Punamia, Khanna Publishers

Program: B.Tech

Semester: Eight

Course: Human Values and Ethics (Open Elective IV)

Course Code: 5A0EEL407

L	T	P	C
2	0	0	0

Course Objective:

To develop students' sensibility with regard to issues of gender in contemporary India.

- To provide a critical perspective on the socialization of human beings.
- To introduce students to information about some key aspects of Indian culture and ethics.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.

1. VALUE CRISIS IN CONTEMPORARY INDIAN SOCIETY

- 1.1 Value Crisis at the Individual Level
- 1.2 Societal Level
- 1.3 Intellectual Level
- 1.4 Cultural Level
- 1.5 Value – What are they?
- 1.6 The Indian Concept of Values.
- 1.7 Modern Approach to the Study of Values.
- 1.8 Aesthetic Sensibilities

2. MORAL AND ETHICAL HUMAN VALUES

- 2.1 Bases for Moral Judgment
- 2.2 Some Canons of Ethics.
- 2.3 Virtue Ethics.
- 2.4 Ethics of Duty.
- 2.5 Ethics of Responsibility
- 2.6 Factors to be considered in Making Ethical Judgments.
- 2.7 Different Meanings of Human Values
- 2.8 A New Approach to Human Value, Freedom, Creativity Love & Wisdom

3. MORAL VALUES IN PROFESSION

- 3.1 What is a Profession?
- 3.2 Professional Ethos

- 3.3 Code of Professional Ethics
- 3.4 Practicing the Code
- 3.5 Corporate Social Responsibility
- 3.6 The Larger Domain of Human Values
- 3.7 Institutionalizing Ethics and Human Values

4. GENDER SENSITIZATION

- 4.1 Socialisation of women
- 4.2 Just Relationships, being together as equals
- 4.3 Declining sex ratio, demographic consequences
- 4.4 Women's work, its politics and economics, fact and fiction, unrecognized and unaccounted work
- 4.5 Domestic violence, eve teasing and harassment. Is home a safe place?

Suggested Reading:

- *Dr. Rajan Mishra, Human Values: Laxmi Publications Pvt. Ltd.*
- *S. Dinesh Babu, Professional Ethics and Human Values; Laxmi Publications Pvt. Ltd.*
- *P.S. Rathore. Business Ethics And Communication; S.Chand Publishing*
- *Dr. K.Alex. Managerial Skills; S. Chand Publishing.*
- *Dr. M. Adithan, Study Skills For Professional Students For Higher Education , S.Chand Publishing*
- *Govindarajan M "Professional Ethics and Human Values."*
- *R.R. Gaur and R. Sangal " A Foundation Course in Human Values and Professional Ethics "*

Websites:

- [www.tatamcgrawhill.com/digital Solutions/](http://www.tatamcgrawhill.com/digital%20Solutions/) monopoly
- www.schandedutech.com
- www.laxmipublications.com

Program: B.Tech

Semester: Eight

Course: Cyber Law and Ethics (Open Elective IV)

Course Code: 5APEC-CEEL 408

L	T	P	C
3	0	0	3

Course Objective:

- Describe laws governing cyberspace and analyze the role of Internet Governance in framing policies for Internet security
- Discuss different types of cybercrimes and analyze legal frameworks of different countries to deal with these cybercrimes
- Explain the importance of jurisdictional boundaries and identify the measures to overcome cross jurisdictional cyber crimes
- Illustrate the importance of ethics in the legal profession and determine the appropriate ethical and legal behaviour according to legal frameworks
- Identify intellectual property right issues in the cyberspace and design strategies to protect your intellectual property
- Assess the legal issues with e-commerce
- Create security policy to comply with laws governing privacy and develop the policies to ensure secure communication
- Recognize the importance of digital evidence in prosecution and compare laws of different countries

Module 1:

Cyber Crimes: Meaning Nature & Classification, kinds of Cyber Crimes, Cyber laws and rights in today's digital age; IT Act.

Module 2:

Jurisdictional Issues: Definition: Jurisdiction to prescribe/Legislative Jurisdiction; Jurisdiction to adjudicate to enforce; Cyber Jurisdiction in Civil, Criminal & International Cases.

Module 3:

Laws & Acts: Unicitral Model Law, Information Technology Act, 2000, Relevant Rules Notifications, Information Technology (Amendment) Act, 2008.

Module 4:

Cyber Slacker: Ethics and Etiquette in Cyber World Potential Liability of Intermediaries, Service Providers and Network Users, Cyber Stalking.

Module 5:

Intellectual Property: Piracy, Insider Threat, Corporate Espionage, Monitoring–Eavesdropping, Traffic Analysis, Surveillance. Defensive Information Warfare Telecommunication Security; Computer Network Security, Computer Break-Ins, Cryptographic Techniques, Steganography;

Suggested Reading:

- *“Cyber War: Law and Ethics for Virtual Conflicts” by O and Ohlin*
- *Cyber Warfare: A Multidisciplinary Analysis (Routledge Studies in Conflict, Security and Technology)” by James A Green*
- *“Protection of Information and the Right to Privacy – A New Equilibrium? (Law, Governance and Technology Series)” Protection of Information and the Right to Privacy – A New Equilibrium? (Law, Governance and Technology Series)*
- *“Editing for Print and Electronic Media: Trends, Ethics and Laws” by Vivek Sehgal*
- *“Investigating Cyber Law and Cyber Ethics: Issues, Impacts and Practices” by Alfreda Dudley and James Braman*

Program: B.Tech

Semester: Eight

Course: Town Planning and Architecture (Open Elective IV)

Course Code: 5APEC-CEEL 409

L	T	P	C
3	0	0	3

Course Objective:

- To familiarize students with the system of spatial planning and the basic tools of spatial policy, methods of preparing analyzes of internal and external conditions and the interpretation of their results.
- To develop skills in developing and presenting spatial development project for a building complex with greenery and selected urban facilities.
- To develop skills in preparing land use plan for selected urban area.

Module 1:

Principles of architectural Design: Definition of architecture: factors influencing architectural development- characteristic features of a style-historical examples, Creative principles: function/strength, aesthetics – deciding the space and form – detailed analysis of factors influencing the space – activity space, circulation space and tolerance space – Factors influencing form- form perception – form expressive of function-form related with material and Structural system. Design principles – elements of composition – point, line, plane, texture, colour etc. – mass and scale, proportion, rhythm, balance and unity – iconic, canonic and analogic design -consideration of comfort factors such as acoustics, lighting, ventilation and thermal aspects.

Module 2:

Functional planning of buildings: Occupancy classification of buildings'-general requirements of site and building – building codes and rules – licensing of building works. Functional planning of building such as residential, institutional, public, commercial, industrial buildings – the process of identifying activity areas and linkages – drawing built diagrams – checking for circulation, ventilation, structural requirements and other constraints preparing sketch plan and working drawings, site, plans.

Jharkhand Municipal acts – planning regulations of corporations and developmental authorities – Jharkhand building bye laws.

Module 3:

Building services: Vertical Transportation: stairs – layout and details of different types of timber

– masonry, steel and concrete stairs – pre-cast concrete stairs, elevators – types – traction, hydraulic operation – passenger, service goods elevators – design considerations of passenger elevators – handling capacity – arrangement of lifts – positioning, escalators, features- operation arrangement – ramps. Ventilation and air conditioning – ventilation requirements -natural and mechanical ventilation – air movement – cross ventilation – effect of orientation – radiation – evaporation, calculation of air conditioning load – summer and winter air conditioning. Plumbing services: typical details of water supply and sewage disposal arrangements for residence, hospitals and hostel buildings – standard requirements.

Module 4:

Town planning theory: Evolution of towns: problems of urban growth – beginning of planning acts – ideal town – garden city movement – concept of new towns and conservative theory – comprehensive planning of towns- Survey and analysis of town: fare maps – land use classification – transportation network – housing demographic and social surveys – economic studies – environmental aspects. Theories of land use planning, transportation planning and housing, development.

Urban area lineation: urban influence zone – urban region concept of regional planning. Planning Process: Concept of master plan: structural plan, detailed town planning scheme and act. Estimating future needs: planning standards for different land use allocation for commerce, industries, public amenities, open areas etc. planning standard for density distributions-density zone, planning standards for traffic networks – standards of roads and paths – provision for urban growth-growth models. Plan implementation: town planning legislation and municipal acts – planning control development schemes – urban financing – land acquisitions – slum clearance schemes – pollution control aspects

Suggested Reading:

1. *Banister Fletcher, History of World Architecture, Taraporevalas.*
2. *Broadbent, Theory of Architecture Design, John Wiley Sons*
3. *Gallien, Urban Pattern, D.Van Nostrand CD. Inc.*
4. *Nelson P. Low's, Planning to Modern City.*