

Department of Civil Engineering
School of Studies of Engineering & Technology
Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur C.G.

Minutes of Meeting of BoS

A meeting of Board of Studies (BoS) of Civil Engineering was held on 22-07-2021 at 04.30 PM in online in the Department of Civil Engineering (through Google Meet) to discuss, finalize and approve the revised Scheme and syllabus of B.Tech. 4th year (7th and 8th Semesters) Civil Engineering w.e.f 2021-22 academic session. The following members of BoS were attended the meeting.

1. Dr. M. C. Rao, Chairman BoS, Head of the Department Civil Engg.
2. Prof. Umesh K Dewangan, Profecesor, Civil Engineering Dept., NIT Raipur, Subject Expert and External member of BoS
3. Dr. Shailendra Kumar, Professor, Civil Engg. Dept., GGV, member of BoS
4. Shri.R.K. Choubey, Asso. Professor, Civil Engg. Dept., GGV, member of BoS
5. Mr.A.K. Parashar, Asst.Professor, Civil Engg. Dept., GGV, member of BoS

The following external member of DRC could not attend the meeting due to ill health.

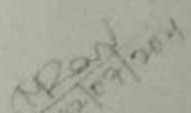
1. Shri. Sunil Kumar Shrivastava, Chief Manager (Civil), SECL, Bilaspur, Industry Expert and member of BoS

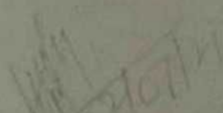
At the outset the chairman welcomed all the esteemed members.

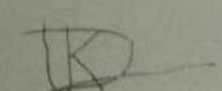
The chairman of the DRC has presented the earlier BoS approved B.Tech. Civil Engineering Scheme (approved in the meeting held on 29-06-2019), the revised Scheme and the syllabus of B.Tech. 4th year, prepared as per the revised scheme & as per the AICTE guidelines to all the esteemed members. During meeting the members discussed the previously approved Scheme, the revised scheme and syllabus at length.

After discussion, the members of BoS have approved the B.Tech. scheme (revised) and detailed syllabus of B.Tech. 4th year (7th & 8th Semester) Civil Engineering and recommended to be made effective from session 2021-22. Further the external member has also sent his comments through e-mail (copy enclosed).

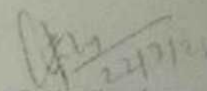
The meeting ended with vote of thanks.

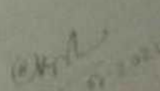

Dr. M. C. Rao


Prof. Shailendra Kumar


Prof. Umesh K Dewangan

(Email copy attached)


Dr. R.K. Choubey

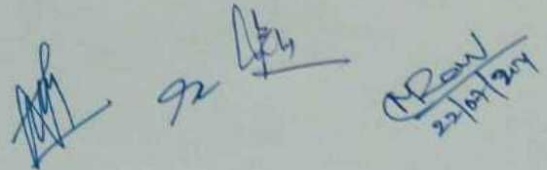

Mr. A.K. Parashar

**CIVIL ENGINEERING DEPARTMENT, SOS, ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA (A CENTRAL UNIVERSITY), BILASPUR**

**SCHEME OF B.TECH.VII SEMESTER CIVIL ENGINEERING (New CBCS)
W.E.F, 2021-22 (ODD SEMESTER)**

S. No	Subject Code	Subjects	period/Week			Scheme of Evaluation			ESE	Grand Total	Credits
			L	T	P	Internal Assessment (IA)					
						CT-I	CT-II	Total			
		Theory									
1	CE07TPC17	Water Resources Engineering-II	3	0	0	15	15	30	70	100	3
2	CE07TPE02	Professional Elective -02X	3	0	0	15	15	30	70	100	3
3	CE07TPE03	Professional Elective -03X	3	0	0	15	15	30	70	100	3
4	CE07TPE04	Professional Elective -04X	3	0	0	15	15	30	70	100	3
5	CE07TPE05	Professional Elective -05X	3	0	0	15	15	30	70	100	3
6	CE07TOE02	Open Elective -02X	3	0	0	15	15	30	70	100	3
		Practical									
1	CE07PPC08	Seminar*	-	-	3	-	-	50	-	50	1.5
2	CE07PPC09	Minor project	0	0	6	-	-	60	40	100	3
3	CE07PPC10	Estimation and Costing	0	0	3	-	-	30	20	50	1.5
										Total Credits	24

L - Lecture Hours, T-Tutorial Hours, P - Practical Hours, CT - Class Test, ESE - End Semester Exam; * Seminar on Industrial Training/Internship undergone during summer vacation of 6th Semester



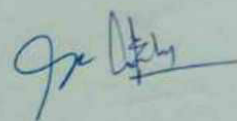
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**CIVIL ENGINEERING DEPARTMENT, SOS, ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA (A CENTRAL UNIVERSITY), BILASPUR**

**SCHEME OF B.TECH.VIII SEMESTER CIVIL ENGINEERING
W.E.F. 2021-22 (EVEN SEMESTER)**

S. No	Subject Code	Subjects	period/Week			Scheme of Evaluation				Grand Total	Credits
						Internal Assessment (IA)			ESE		
			L	T	P	CT-I	CT-II	Total			
		Theory									
1	CE08TPC18	Earthquake Resistant Design of structure	3	0	0	15	15	30	70	100	3
2	CE08TPE06	Professional Elective -06X	3	0	0	15	15	30	70	100	3
3	CE08TPE07	Professional Elective -07X	3	0	0	15	15	30	70	100	3
4	CE08TOE03	Open Elective -03X	3	0	0	15	15	30	70	100	3
		Practical									
1	CE08PPC11	Major Project	0	0	14	-	-	120	80	200	7
2	CE08PPC12	Structural Detailing Lab	0	0	3	-	-	30	20	50	1.5
										Total Credits	20.5

L - Lecture Hours, T-Tutorial Hours, P - Practical Hours, CT - Class Test, ESE - End Semester Exam


List of Professional (Core) Electives

Sl. No.	Subject Code	Name of Subject	Credits	Semester
x	CE06TPE01X	Professional Elective-1 (PE Group-1)	4	VI
A	CE06TPE01A	Structural Analysis by Matrix Methods		
B	CE06TPE01B	Advanced Surveying		
C	CE06TPE01C	Advanced Concrete Design		
D	CE06TPE01D	Railway Engineering		
E	CE06TPE01E	Basics of Computational Hydraulics		
x	CE07TPE02X	Professional Elective-2 (PE Group-2)	3	VII
A	CE07TPE02A	Pre-stressed Concrete		
B	CE07TPE02B	Construction Engineering Materials		
C	CE07TPE02C	Disaster Preparedness and Planning		
D	CE07TPE02D	Advanced Structural Analysis		
E	CE07TPE02E	Low Cost Housing Techniques		
x	CE07TPE03X	Professional Elective-3 (PE Group-3)	3	VII
A	CE07TPE03A	Environmental Geo-technology		
B	CE07TPE03B	Air Pollution and Control Engineering		
C	CE07TPE03C	Solid and Hazardous Waste Management		
D	CE07TPE03D	Design of Hydraulic Structures		
E	CE07TPE03E	Environmental Impact Assessment and Life Cycle Analysis		
x	CE07TPE04X	Professional Elective-4 (PE Group-4)	3	VII
A	CE07TPE04A	Engineering Hydrology		
B	CE07TPE04B	Structural Dynamics		
C	CE07TPE04C	Foundation Engineering		
D	CE07TPE04D	Rock Mechanics		
E	CE07TPE04E	Water Resources Planning & Management		

		Name of Subject	Credits	Semester
		Professional Elective-5 (PE Group-5)	3	VII
Sl. No.	Subject Code			
x	CE07TPE05X			
A	CE07TPE05A	Industrial Structures		
B	CE07TPE05B	Airport Planning and Design		
C	CE07TPE05C	Highway Construction and Management		
D	CE07TPE05D	Contracts Management		
E	CE07TPE05E	Construction Projects Planning & Systems		
		Name of Subject	Credits	Semester
		Professional Elective-6 (PE Group-6)	3	VIII
Sl. No.	Subject Code			
x	CE08TPE06X			
A	CE08TPE06A	Offshore Engineering		
B	CE08TPE06B	Surface Hydrology		
C	CE08TPE06C	Bridge Engineering		
D	CE08TPE06D	Water and Air Quality Modelling		
E	CE08TPE06E	Construction Equipment & Automation		
		Name of Subject	Credits	Semester
		Professional Elective-7 (PE Group-7)	3	VIII
Sl. No.	Subject Code			
x	CE08TPE07X			
A	CE08TPE07A	Infrastructure Planning and Design		
B	CE08TPE07B	Traffic Engineering		
C	CE08TPE07C	Repair and Rehabilitation of Structures		
D	CE08TPE07D	Finite Element Analysis		
E	CE08TPE07E	Urban Hydrology and Hydraulics		

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List of Open Electives

Sl. No.	Subject Code	Name of Subject	Credits	Semester
x	CE06TOE01X	Open Elective-1 (OE Group-1)	3	VI
A	CE06TOE01A	Metro Systems and Engineering		
B	CE06TOE01B	Rural Technology and Community Development		
C	CE06TOE01C	Remote Sensing and GIS		
D	CE06TOE01D	ICT for Development		
Sl. No.	Subject Code	Name of Subject	Credits	Semester
x	CE07TOE02X	Open Elective-2 (OE Group-2)	3	VII
A	CE07TOE02A	Artificial Neural Network		
B	CE07TOE02B	Economic Policies in India		
C	CE07TOE02C	History of Science and Engineering		
D	CE07TOE02D	Engineering Risk-Benefit Analysis		
Sl. No.	Subject Code	Name of Subject	Credits	Semester
x	CE08TOE03X	Open Elective-3 (OE Group-3)	3	VIII
A	CE08TOE03A	Management Information System		
B	CE08TOE03B	Enterprise Resource Planning		
C	CE08TOE03C	Cyber Law and Ethics		
D	CE08TOE03D	Human Resources Development and Organizational Behaviour		

SEMESTER VII

SYLLABUS	(SEMESTER VII)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	CE07TPC17							70	100	3
Subject:	Water Resources Engineering-II	3	0	0	15	15	30			

Course Learning Objectives:

- Introduce the types of dams and its failure criteria for structural stability
- Introduce the concepts of spillways and energy dissipaters
- Discuss the concept of diversion Head-works and understand design theory of seepage flow
- Introduce the concepts of regulation works, falls and hydraulic gates of spillways
- Know the concepts and design principles of Cross Drainage Works

Course Content:

UNIT 1: Dams: Types of Dams, Forces, failure of dams and criteria for structural stability, principle and shear stress, stability analysis, Elementary profile of a gravity dam, Profile from practical considerations, Openings in dams.

UNIT 2: Spillways and Energy Dissipaters: Introduction, essential requirements of a spillway, spillway capacity, components, Types of spillways, Ogee Spillway, Energy Dissipation below spillways, Types of Energy dissipater, USBR and Indian stilling basins.

UNIT 3: Diversion Head-works: Introduction, Types of diversion works, location and components, Weir and Barrage, Effect of construction of weir on the river regime, Bligh's creep theory, Theory of seepage flow, Khosla's theory, Vertical drop Weir.

UNIT 4: Regulation Works: Introduction, Definition of falls, necessity and location of falls, comparative study of the main types of falls. Hydraulic Gates: Spillway gates, types, tainter gates, Roller gates.

UNIT 5: Cross Drainage Works: Introduction, suitability, various types of C-D Works, Design principles of C-D Works

Text Books:

1. Irrigation Engineering and Hydraulic Structures – S.K. Garg (Khanna Publications)
2. Irrigation Engineering – B.C. Punmia (Laxmi Publications)
3. Irrigation, Water Resources and Water Power Engineering – Dr. P.N. Modi (Standard Book House)

Course Outcome

- Explain the various forces acting on gravity dam and its stability analysis
- Design of ogee spillway and getting concept of energy dissipation
- Explain the diversion head-works and the theory of seepage flow
- Demonstrate the concept of regulation works, falls and spillways gates
- Apply the basic design principles of Cross Drainage Works

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SYLLABUS							
Subject Code:	CE07TPE02X	CREDITS: 3			Internal Assessment (IA)		ESE
Subject:	Professional Elective -2X	L	T	P	CT-I	CT-II	TOTAL
		3	0	0	15	15	30
Professional Elective-2A or Professional Elective-2B or Professional Elective-2C or Professional Elective-2D or Professional Elective-2E		Any one subject to be Selected from the Professional Electives Group-2					
Professional Electives Group -2							
CE07TPE02A	Pre-stressed Concrete						
CE07TPE02B	Construction Engineering Materials						
CE07TPE02C	Disaster Preparedness and Planning						
CE07TPE02D	Advanced Structural Analysis						
CE07TPE02E	Low Cost Housing Techniques						

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SYLLABUS	(SEMESTER VII)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
<i>Subject Code:</i>	CE07TPE02A							70	100	3
<i>Subject:</i>	Pre-stressed Concrete	3	0	0	15	15	30			

Course Learning Objectives:

- To introduce fundamental of pre stressing and develop understanding of pre stressing system.
- To determine loss of pre stress in pre tensioned and post tensioned members as per IS Code provision.
- To analyze simple and composite section in flexure.
- To evaluate deflection in beam and design simply supported beams as per IS Code provision.
- To design the members for shear reinforcement, Ultimate Shear Strength and end block design.

Course Content:

UNIT 1: Introduction: Fundamentals of prestressing - Classification and types of prestressing- Concrete Strength and strain characteristics - Steel mechanical properties - Auxiliary Materials like duct formers.

UNIT 2: Prestressing Systems: Principles of pretensioning and post tensioning - study of common systems of prestressing for wires strands and bars. Losses of Prestress: Losses of prestress in pre tensioned and post tensioned members - I.S. code provisions.

UNIT 3: Analysis of Sections: In flexure, simple sections in flexure, kern distance - cable profile - limiting zones - composite sections cracking moment of rectangular sections.

UNIT 4: Deflection of Beams: Long term and Short term deflection and Design of Simply Supported Beams, Allowable stress as per I.S. 1343 - elastic design of rectangular and I-sections.

UNIT 5: Shear and Bond: Shear and bond in prestressed concrete beams - conventional design of shear reinforcement - Ultimate shear strength of a section - Prestress transfer in pretensioned beams- Principles of end block design.

Text Books:

1. Krishna Raju. N "Prestressed Concrete", Tata Mc Graw Hill.
2. Lin.T.Y, "Prestressed concrete", Mc Graw Hill Pub. Co.
3. Rajagopalan, "Prestressed concrete", Narosa Publishing House.

Course Outcomes-

- *Describe* mechanical properties of pre stressed concrete, types of pre stressing and its system.
- *Calculate* losses in pre-tensioned and post tensioned members.
- *Analyze* pre-stressed concrete members for flexure, shear and cracking moment.
- *Design* pre stressed concrete beams of rectangular and I section and compute deflection.
- *Explain* principle of end block design, pre stress transfer, shear and bond.

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SYLLABUS	(SEMESTER VII)	Period s/ Week		Internal Assessment (IA)			ESE	Grand Total	Credits	
		L	T	P	CT-I	CT-II				TOTAL
Subject Code:	CE07TPE02B							70	100	3
Subject:	Construction Engineering Materials	3	0	0	15	15	30			

Course Learning Objectives:

- To introduce various construction materials on the basis of various classifications.
- To understand about various mortar making materials & its classification.
- To understand the emerging role of using polymers as construction material.
- To introduce about various modern construction materials.

Course Content:

UNIT-1 Construction Materials

Classifications of Construction Materials. Consideration of physical, Mechanical, thermo-physical Properties, characteristics behaviour under stress, Selection criteria for construction materials, green building materials.

UNIT-2 Materials for making Mortar and concrete

Lime manufacture, properties, hardening of lime, types of lime, lime concrete uses. Cement, pozzolanic material, aggregates, water, admixtures - characteristics, properties and uses. Types of mortars, special mortars, their properties and applications.

UNIT-3 Polymers in civil engineering

Rubber and plastics, properties, effect of temperature on mechanical properties. Uses and application. Polymers, fibres and composites, Fibre reinforced plastic. Architectural use and aesthetics of composites. Adhesives and sealants. Structural elastomeric bearings and resilient seating. Moisture barriers, Polymer foams and polymers in Building Physics. Polymer concrete composites

UNIT- 4 Metals & Ceramics

Types of structural steels, special steel, alloy steel, stainless steel, light gauge steel, Corrosion of concrete and reinforcing steel in various environments. Ceramic Materials: Classification, Refractories, glass, glass wool, mechanical, thermal and electrical properties, fire resistance materials, Uses and application.

UNIT V MODERN MATERIALS

Glass - Sealants for joints - Fibre glass reinforced plastic - Clay products - Refractories - Composite materials - Types - Applications of laminar composites - Fibre textiles - Geomembranes and Geotextiles for earth reinforcement.

Text Books:

1. Rangawala S.C. Engineering Materials Chortor Publications 1991.
2. S.K. Duggal Building Materials, New Age International Publications 2006.
3. Bruntley L.R Building Materials Technology Structural Performance & Environmental Impact McGraw Hill Inc 1995.
4. R Chudley Construction Technology, Vol I - IV Longman Group Construction Ltd. 1973.

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Course Outcomes- On completion of this course the student will be able:

1. To remember & understand about various physical, Mechanical, thermo-physical Properties of various construction materials.
2. To Acquire knowledge about composition, microstructure, and engineering behavior of various materials used in civil engineering applications.
3. To understand about various Mortar & Concrete producing materials
4. To Remember & understand about modifications possibilities in construction materials.

SYLLABUS	(SEMESTER VII)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
<i>Subject Code:</i>	CE07TPE02C									
<i>Subject:</i>	Disaster Preparedness and Planning	3	0	0	15	15	30	70	100	3

Course Learning Objectives:

1. Provide an understanding of the social nature of natural hazards and disasters.
2. Give students knowledge of the social factors affecting disaster mitigation, preparedness, response, and recovery.
4. Reveal unfounded myths about human behaviour in disasters.
5. Increase awareness of hazards and disasters around the world and the unequal social consequences stemming from disaster events.
6. Teach students skills to use information technology to access current disaster-relevant information for assessing, planning, mitigating, responding to and recovery from disaster from local through global levels.

Course Content:

UNIT-1 Introduction – Concepts and definitions: disaster, hazard, vulnerability, resilience, risks severity, frequency and details, capacity, impact, prevention, mitigation.

UNIT-2 Disaster Impacts – Disaster impacts (environmental, physical, social, ecological, economic, political, etc.); health, psycho-social issues; demographic aspects (gender, age, special needs); hazard locations; global and national disaster trends; climate change and urban disasters.

UNIT-3 Disaster Risk Reduction (DRR)– Disaster management cycle – its phases: prevention, mitigation, preparedness, relief and recovery; structural and non-structural measures; risk analysis, vulnerability and capacity assessment; early warning systems, Post disaster environmental response (water, sanitation, food safety, waste management, disease control, security, communications); Roles and responsibilities of government, community, local institutions, NGOs and other stakeholders; Policies and legislation for disaster risk reduction, DRR programmes in India and the activities of National Disaster Management Authority.

UNIT- 4 Structural and non-structural safety measures

UNIT- 5 Development vs Sustainable Development

Text Books:

1. Pradeep Sahni, 2004, Disaster Risk Reduction in South Asia, Prentice Hall.
2. Singh B.K., 2008, Handbook of Disaster Management: Techniques and Guidelines, Rajat Publication.

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3. Ghosh G.K., 2006, Disaster Management, APH Publishing Corporation

Course Outcomes-

The student will develop competencies in

- the application of Disaster Concepts to Management
- Analyzing Relationship between Development and Disasters.
- Ability to understand Categories of Disasters
- realization of the responsibilities to society

SYLLABUS	(SEMESTER VII)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
<i>Subject Code:</i>	CE07TPE02D							70	100	3
<i>Subject:</i>	Advanced Structural Analysis	3	0	0	15	15	30			

Course Learning Objectives:

- To learn stiffness method for analyzing determinate and indeterminate structure.
- To study general theory regarding beams subjected to concentrated and distributed loads.
- To analyze curved beams in plane.
- To understand symmetrical and non-symmetrical bending of straight beams.
- To define basic fundamental of structural dynamics.

Course Content:

UNIT-1: Direct stiffness method Introduction - element stiffness matrix - rotation transformation matrix - transformation of displacement and load vectors and stiffness matrix - equivalent nodal forces and load vectors - assembly of stiffness matrix and load vector - determination of nodal displacements and element forces - analysis of plane truss - plane frame (with numerical examples) - analysis of grid - space-truss and space-frame (without numerical examples) - computer Implementation - introduction to analysis packages (A project on development of an analysis program using above method is envisaged at this stage)

UNIT-2: Beams on elastic foundation: general theory - infinite beam subjected to concentrated load - boundary conditions - infinite beam subjected to a distributed load segment - semi-infinite beam subjected to loads at its end - semi-infinite beam with concentrated load near its end - short beams.

UNIT-3: Beams curved in plane: Analysis of cantilever beam curved in plan - analysis of circular beams over simple supports

UNIT-4: Non-symmetrical bending of straight beams: Shear centre - a review, symmetrical and non-symmetrical bending - bending stresses in beams subjected to non-symmetrical bending - deflections of straight beams subjected to unsymmetrical bending - fully plastic load for unsymmetrical bending.

UNIT-5: Introduction to Structural Dynamics

Single degree of freedom - un-damped and damped vibration-free vibration - forced vibration,

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introduction to multi degree of freedom systems.

Text Books:

1. Wang, C. K., Matrix Methods of Structural Analysis, International Textbook Company, 1970.
2. Przemieniecki, J. S., Theory of Matrix Structural Analysis, McGraw Hill, New York, 1985.
3. Weaver, W., and Gere, J. M., Matrix Analysis of Framed Structures, CBS Publishers, 2004.
4. Rajasekaran, S., and Sankarasubramanian, G., Computational Structural Mechanics, PHI
5. Boresi, A. P. and Sidebottom, O. M., Advanced Mechanics of Materials, John Wiley and Sons, 2003.
6. Srinath, L. S., Advanced Mechanics of Solids, Tata McGraw Hill, 2009.
7. Timoshenko, S., Strength of Materials, Part II, CBS Publishers, 2002.
8. Reddy, C. S., Basic Structural Analysis, Tata McGraw Hill, New Delhi, 2007.
9. Paz M., Structural Dynamics, CBS Publishers, 2007.
10. Meirovich, L., Elements of Vibration Analysis, McGraw Hill, 2007.

Course Outcomes-

- To interpret force-displacement relationship in truss, space frame etc. using direct stiffness method.
- To investigate semi-infinite & infinite beam subject to concentrated and distributed loads.
- To analyze circular and cantilever beams curved in plane.
- To explain symmetrical and non-symmetrical bending of straight beams.
- To outline basic fundamental of structural dynamics; free & forced vibration and multi degree of freedom systems.

SYLLABUS	(SEMESTER VII)	Periods/Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
<i>Subject Code:</i>	CE07TPE02E							70	100	3
<i>Subject:</i>	Low Cost Housing Techniques	3	0	0	15	15	30			

Course Learning Objectives:

- To introduce various housing technique adopted in different zones in country.
- To study various uses of cost effective Technologies.
- To learn needs and innovations of building techniques for low cost construction.
- To learn space norms for low cost construction.
- To learn about building materials and costing of low cost construction.

Course Content:

UNIT-1 An introduction to the subject to understand the various building techniques adopted in different climatic zones of the country, which resulting in varied vernacular expressions.

UNIT-2 Use of cost effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

UNIT-3 Need for low cost construction, both in the rural and the urban sectors. Innovations of building techniques for low cost construction.

UNIT- 4 Analysis of space norms for low cost buildings. Study of usages pattern of low cost buildings by the habitants.

UNIT- 5 Comparative analysis of building materials and costing. Works of Laurie Baker, Hassan Fathy and other prominent architects.

Text Books:

1. "Building Systems for Low Income Housing", Ashok Kumar Jain; Management Publishing House, 1992
2. "Low Cost Housing in Developing Countries", Guru Charan Mathur; For Centre for Science & Technology of the Non-Aligned and Other Developing Countries, Oxford & IBH Publishing Company, 1993

Course outcomes:

Upon completion of this course students will be able to

- To classify various housing techniques adopted in different zones in country.
- To identify various uses of cost effective Technologies.
- To understand needs and develop innovations of building techniques for low cost construction.
- To explain space norms for low cost construction.
- To analysis about building materials and costing of low cost construction.

SYLLABUS								
(SEMESTER-VII)								
Subject Code:	CE7TPE3X	CREDITS:3			Internal Assessment (IA)			ESE
Subject:	Professional Elective - 3X	L	T	P	CT 1	CT 2	TOTAL	70
		3	-	-	15	15	30	
Professional Elective-3A or Professional Elective-3B or Professional Elective-3C or Professional Elective-3D or Professional Elective-3E		Any one subject to be Selected from the Professional Electives						
Professional Electives Group -3								
CE07TPE03A		Environmental Geo-technology						
CE07TPE03B		Air Pollution and Control Engineering						
CE07TPE03C		Solid and Hazardous Waste Management						
CE07TPE03D		Design of Hydraulic Structures						
CE07TPE03E		Environmental Impact Assessment and Life Cycle Analysis						

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