



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Technology and Science
Choice Based Credit System (CBCS) in Light of NEP-2020
Civil Engineering Department
Generic Elective (Postgraduate Courses)
EVEN Sem

COURSE CODE	CAT-EGO-RY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MTCE 1208	GE	Green Buildings and Sustainable Materials	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit.

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. Learn the principles of planning and orientation of buildings.
2. Acquire knowledge on various aspects of green buildings

Course Outcomes (COs):

The student will be able to

1. Understand the concepts of green buildings.
2. Explain the principles of building planning, its bylaws.
3. Understand the aspects related to design of green buildings
4. Identify use of sustainable material in green buildings.

Syllabus:

UNIT I

8 Hrs.

Introduction: What is Green Building, why to go for Green Building, Benefits of Green Buildings, Green Building Materials and Equipment in India, what are key Requisites for Constructing a Green Building, Important Sustainable features for Green Building.

UNIT II

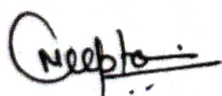
8 Hrs.

Green Building Technologies: Introduction- Necessity - Concept of Green building. Principles of green building – Selection of site and Orientation of the building – usage of low energy materials – effective cooling and heating systems – effective electrical systems – effective water conservation systems - Certification systems- Green Rating for Integrated Habitat Assessment (GRIHA) and Leadership in Energy and Environmental Design (LEED), case studies,

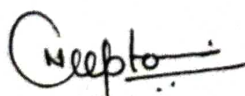
UNIT III

8 Hrs.

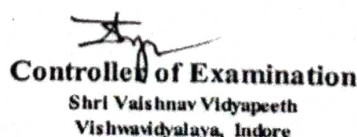
Green Building Design: Introduction, Reduction in Energy Demand, Onsite Sources and Sinks, Maximize System Efficiency, Steps to Reduce Energy Demand and Use Onsite Sources and Sinks, Use of Renewable Energy Sources. Ecofriendly captive power generation for factory, Building requirement, ECBC code.

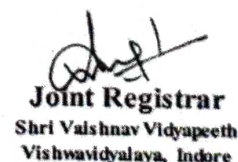


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UNIT IV

Principles of Planning: Relevant building bylaws, site selection for buildings, orientation of buildings, common errors in planning, Provision of rainwater harvesting. Material Conservation Handling of non-process waste, waste reduction during construction, materials with recycled content, local materials, material reuse, certified wood, rapidly renewable building materials and furniture. **8 Hrs.**

UNIT V

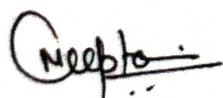
Sustainable Materials: Role of Construction Materials in Sustainable Construction Activities. Developments and Innovation Construction Materials and Technology to Improve Sustainability. **8 Hrs.**

Textbooks:

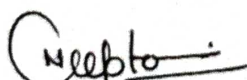
1. Shahane, V. S, "Planning and Designing Building", Poona, Allies Book Stall, 2004.
2. Michael Bauer, Peter Mösele and Michael Schwarz "Green Building – Guidebook for Sustainable Architecture" Springer, 2010.
3. Tom Woolley, Sam Kimmins, Paul Harrison and Rob Harrison "Green Building Handbook" Volume I, Spon Press, 2001.

Reference Books:

1. Mili Majumdar, "Energy-efficient buildings in India" Tata Energy Research Institute, 2002.
2. TERI "Sustainable Building Design Manual- Volume I & II" Tata Energy Research Institute, 2009



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MTCE 1209	GE	Construction Project Management	60	20	20	0	0	3	0	0	3

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Course Educational Objectives (CEOs):

1. To train the students with the latest and the best in the rapidly changing fields of Construction Engineering, Technology and Management.
2. To prepare the students to be industry leaders who implement the best engineering and management practices and technologies in the construction industry.
3. To continually work with industry to enhance the program's effectiveness and the opportunities for innovation in the construction industry.

Course Outcomes (COs):

The student will be able to

1. Apply theoretical and practical aspects of project management techniques to achieve project goals.
2. Possess organizational and leadership capabilities for effective management of construction projects.
3. Apply knowledge and skills of modern construction practices and techniques.
4. Have necessary knowledge and skills in accounting, financing, risk analysis and contracting.
5. Capable of using relevant software packages for planning, scheduling, executing and controlling of construction projects.

UNIT I

8 Hrs.

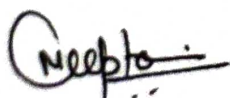
General Management: Introduction and characteristics of management, Principle, and function management, Scientific of management.

Construction Management: Definition, functions and scope of construction management; scientific methods of management, construction team.

UNIT II

8 Hrs.

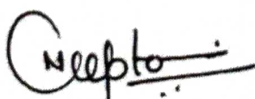
Manpower Planning: Manpower Planning process, Role of HR manager, Personnel Principles, Managerial Staffing, Recruitment Selection strategies. **HUMAN RELATIONS AND Organizational Behaviour:** Introduction & Significance, Basic individual psychology, Conflicts in organizations, Engineer as Manager, Communication, and negotiation skills.



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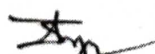
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UNIT III

8 Hrs.

Materials Management: Scope, Objective and functions of material management, Procurement and store management, Materials handling management, Inventory control and management, Disposal of Surplus Materials.

UNIT IV

9 Hrs.

Construction Planning: Basic Concepts in the Development of Construction Plans, Choice of Technology and Construction Method, Estimating Activity Durations & Resource Requirements for Work Activities.

Site Layout: Principles governing site lay out, factors effecting site lay out, preparation of site lay out, Feasibility study, project reports, progress reports, monitoring and controlling construction activities.

UNIT V

8 Hrs.

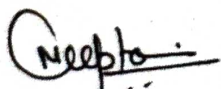
Construction Contracts: Indian Contracts Act, Elements of Contracts, Types of Contracts, Features, Suitability, Design of Contract Documents, International Contract Document, Standard Contract Document.

Text Books:

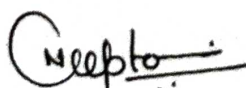
1. Mahesh Verma, 'Construction Equipment and its Planning and Application'.
2. R.L. Peuripo, 'Construction Planning Equipment and Methods', Tata McGraw Hill.
3. Calin M. Popescu, Chotchai Charoenngam, "Project Planning, Scheduling and Control in Construction: An Encyclopedia of terms and Applications", Wiley, New York, 1995.

Reference Books:


1. Chitkara, K.K. "Construction Project Management: Planning, Scheduling and Control", McGraw-Hill Publishing Company, New Delhi, 1998
2. Carleton Counter II and Jill Justice Coutler, "The Complete Standard Handbook of Construction Personnel Management", Prentice-Hall, Inc., 1989.

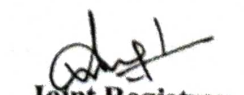


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MTCE 1210	GE	Disaster Resistant Structures	60	20	20	0	0	3	0	0	3

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Course Educational Objectives (CEOs):

Impart knowledge of the principle and design of disaster resistant building as per design philosophies and codes.

Course Outcomes (COs):

The student will be able to

1. Understand about different types of disasters.
2. Classify different disaster-prone areas.
3. Understand provisions of disaster resistant structures.

UNIT I

07 Hrs.

Introduction to Disaster and Prone Areas: Basic characteristics of disasters: its behaviour and important parameters: Earthquake Risk; Different seismic zones – Zone II, Zone III, Zone IV, Zone V; Cyclone Risk Areas – Zone I, II, III and IV; Flood Risk; Landslide; Fire; Blasting.

UNIT II

08 Hrs.

Damage Types and Reasons: Damage due to natural hazards; Earthquake Damage – Types and causes; Cyclone Damage – Types and causes; Flood/ Rain – Types and Causes; Vulnerability of Non-Engineered Buildings against Earthquake, Cyclone & Flood Hazards.

UNIT III

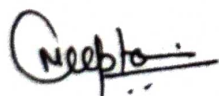
09 Hrs.

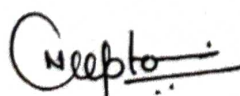
Basic Rules of Disaster Resistant Design: Disaster Resistant Construction Principles, Location of the structure, Building plan, Walls - Length, Height, Thickness & Connection; Walls – Openings; General Rules of Masonry - For Brick, Concrete Blocks & Stone.

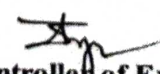
UNIT IV

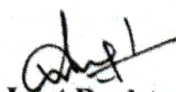
08 Hrs.

Concrete and Masonry Buildings: Typical damage and failure patterns of brick masonry, causes of damages in brick masonry, Damage to RCC buildings: Sliding of roof support, falling of infill walls, crushing of column ends, diagonal cracking of column beam joints, pulling out of reinforcement bars, foundation sinking and tilting, Typical damage, and failure of stone masonry, causes of damages in stone masonry.


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UNIT V

08 Hrs.

Codal Provisions: Guidelines for improving the cyclonic resistance of low-rise houses and other buildings/structures as per IS 15498:2004

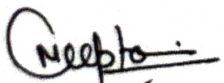
Code of Practice for Earthquake Resistant Design and Construction of Buildings as per IS 4326, 1993.

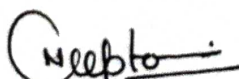
Textbooks:


1. Manual on Hazard Resistant Construction in India d by Rajendra Desai and Rupal Desai, National Centre For People's - Action In Disaster Preparedness. (NCPDP).
2. Earthquake Disaster Reduction: Masonry Buildings, Design and Construction by Anand S. Arya 2007
3. Earthquake Resistant Design of Structures Duggal, S. K. Oxford University Press, Delhi, 2013

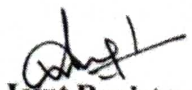
Reference Books:

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2. IS 4326, 1993, Code of Practice for Earthquake Resistant Design and Construction of Buildings.


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