MULTIDISCIPLINARY MINOR BUCKET
for AFFILIATED INSTITUTES
MINOR DEGREE IN CIVIL ENINGEERING
(For only B.Tech. in Civil/Civil-Integrated /Civil & Environmental /Civil & Infrastructure Engineering program students)

Semester	Subject Code	Subject Name	Total Credit
SEM-III	25AFMDPLAN306A	Site Planning	3
SEM-III	25AF1191MD306	Introduction to Engineering Geology	3
SEM-IV	25AFMDPLAN406A	Fundamentals of Urban Design	2
SEM-IV	25AFMDPLAN406B	Town and Urban Planning	2
SEM-V	25AFMDPLAN506A	Real Estate Development and Management	3
SEM-V	25AFMDPLAN506B	Planning Legislation	3
SEM-VI	25AFMDPLAN606A	Disaster Mitigation and Management	3
SEM- VI	25AFMDPLAN606B	Project Management	3
SEM-VII	25AFMDPLAN706A	Sustainable Building Planning	3
SEM-VII	25AFMDPLAN706B	Appropriate Building Technologies	3
MINIMUM CREDITS REQUIRED TO COMPLETE A MINOR DEGREE IN PLANNING ENGINEERING			**14**

SUBJECT CODE	MDM -I	CREDITS
25AFMDPLAN306A	Site Planning	3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives	
COBJ1	Understand principles of site selection and site planning
COBJ2	Develop skills in site analysis
COBJ3	Learn earth form grading techniques
COBJ4	To understand the importance of site in architectural design
COBJ5	To analyse ecological and geomorphological characteristics of a site.
Course Outcomes: Students will be able to	
CO1	Learn various terms involved in site planning and their relevance in design of buildings of varying scales.
CO2	Understand various parameters that need to be considered in site analysis and its implications on site
CO3	Perform grading design for sites, roads, and sports fields, including cut-and-fill calculations and earthwork volume estimation.
CO4	Evaluate the consequences of interventions in a site at micro and macro scales
CO5	Apply the principles of site planning learnt in real/ studio projects

Course Contents

Module 1	**Site Analysis**	**Hrs. 6**

Importance of site analysis - On site and off-site factors - Analysis of natural, cultural and aesthetic factors – topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available - sources of water supply and means of disposal system, visual aspects, visual analysis.

Module 2	**Preparation of site analysis diagram**	**Hrs. 6**

Study of contours: slope analysis - grading process – grading criteria - functional and aesthetic considerations. Environmental consideration, Site Analysis tools and Techniques.

Module 3	**Site Planning**	**Hrs. 6**

Definition of plot, site, land and region, units of measurements. Objective of Site Planning, Site Planning Process, Design and management of site, Site Planning and Site Layout Principles

Module 4	**Street and Parking design:**	**Hrs. 6**

Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, road widths and parking, regulations. Turning radii and street

Module 5	**Site Grading**	**Hrs.6**

Balancing Cut and Fill- measures to minimize impact of site grading- grade changes site stabilization techniques- slope stability- retaining walls- erosion and sediment control Storm water management- swales- detention and retention basins Gray water systems- sanitary sewers- on site sewage disposal systems-sewage treatment plants

Text Books:	
1	Randhawa M S : Flowering Trees. National Book Trust, New Delhi
2	Santapau H: Common Trees. India The Land And The People
3	Mukherjee Pippa : Nature Guides, Common Trees of India. Worldwide Fund For Nature, India.
4	Virginie & Elbert George A : Foliage Plants For Decorating Indoors. Timber Press,
5	Cloustan Brain : Landscape Design With Plants Ed. 2. Heinemann Newnes Oxford
Reference Books:	
1	Time Saver Standards for Landscape Architecture, Charles W Harris and Nicholas T Dine Mcgraw – Hill International Edition, Arch. Series
2	Bartrum Douglas: Rock Garden. John Gifford Ltd., London
3	Perkins Philip H: Concrete Floors Finishers
4	Text By David Stevens: Ultimate Water Garden Book
5	Littlewood Michael: Tree Detailing. London. Butterworth Architecture, 1988.

SUBJECT CODE	MDM -I	CREDITS
25AF1191MD306	Introduction to Engineering Geology	3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives	
COBJ1	To recognize and classify rock and soil materials to identify suitable construction materials or as a stable foundation.
COBJ2	To offer the essential geological knowledge necessary for the construction of various kinds of civil engineering structures.
COBJ3	To focus on the core activities of engineering geologists like site characterization and geologic hazard identification and mitigation.
COBJ4	To arrange, and carry out site investigation methods to extract the necessary characteristics for a variety of technical applications.
COBJ5	To interpret field and laboratory data for safety and security of mega structures like tunnels and dams

Course Outcomes: Students will be able to	
CO1	Learn mineralogical and petrological features that are significant in characterizing its competency as
CO2	Learn how different geological conditions influence the design parameters of Civil Engineering
CO3	Understand the earth's structure and deformation history before applying rock mechanics theory.
CO4	Understand the site selection criteria for designing civil engineering projects that are both safe and
CO5	Learn about the influence of geological conditions on dams and tunnels, and also provide related

Course Contents

Module 1	**Introduction and Geomorphology**	**Hrs. 8**

Introduction and history of Engineering Geology and related branches, applications in Civil engineering.

Interior of Earth, Plate tectonics, Earthquakes, seismic zones in India.

Geomorphology: - basic principles and processes loke denudation and types of weathering.

Landform formation and types associated with river, wind, and sea, and their relevance to civil engineering.

Module 2	**Mineralogy and Petrology**	**Hrs. 8**

Mineralogy: - Study of physical properties of minerals and study of common rock-forming minerals & clay minerals. Petrology: Definition, rock cycle. Civil engineering significance. Igneous rocks: Origin, classification, textures, related structures, and their importance. Sedimentary rocks: Formation, classification, textures and structures, and their importance. Metamorphic rocks: Agents and types of metamorphism, textures, and structures and their importance.

Module 3	**Structural Geology and Groundwater**	**Hrs. 6**

Geological maps: - Geologic cross-section, Attitude of beds like outcrops, strike, and dip. Study of tectonic structures like folds and faults their origin, classification, diverse effects, and case studies. Joints and unconformities their origin, types, and diverse effects case studies. Groundwater: Sources of groundwater, water table, zones of groundwater,

porosity, and permeability.		
Module 4	**Geological Investigations**	**Hrs. 6**
Introduction, geological survey, steps in geological investigations. Exploratory drilling types and limitations, preservation of cores, core logging, core recovery, Rock Quality Designation (RQD). Engineering properties of rocks like density, unit weight, porosity, strength, and index properties. Geophysical investigation applications in Civil engineering methods like electrical resistivity method, gravity method.		
Module 5	**Geology of Dams, Reservoirs, and Tunnels**	**Hrs. 8**
Dams: - Influence of geological conditions on location, alignment, design, and type of a dam, geological considerations in site selection for dams, and site improvement techniques e.g. grouting. Tunnelling: - Types of tunnels, tunnelling in various conditions e.g. folded/faulted region, deccan trap or any other kind of rocks. Influence of geological conditions on tunnelling and remedial measures like tunnel lining. Bridges: - Types of bridges, dependence of types of bridges on geological conditions and remedial measures.		

Text Books:	
1	Singh Prabin, 2009, "Engineering and General Geology", S. K. Katariya and sons, Delhi.
2	Mukerjee P. K., 2013, "A Text Book of Geology", World Press Pvt. Ltd., Calcutta.
3	Gokhale K.V.G.K. and Rao D. M., 1982, "Experiments in Engineering Geology", TMN, New-Delhi.
4	Gupte R. B., "A Text Book of Engineering Geology", Pune Vidyarthi Griha Prakashan, Pune.
5	Subinoy Gangopadhyay, 2013, "Engineering Geology", Oxford University Press.
Reference Books:	
1	G. W. Tyrrell, 1926, "Principles of Petrology", B. I. Publication Pvt. Ltd., New Delhi .
2	Legget R. F., 1983"Geology Handbook in Civil Engineering", McGraw-Hill, New York.
3	Krynine D. P. & Judd W. R., 2005, "Principles of Engineering Geology & Geo- technics", CBS Publishers & distri. New Delhi.
4	Billings M. P., 1942, "Structural Geology", Prentice Hall of India Private Ltd., New Delhi.
5	A. Holmes, 1944, "Principles of Physical Geology", ELBS Chapman & Hall, London.

SUBJECT CODE	MDM -II	CREDITS
25AFMDPLAN406A	Fundamentals of Urban Design	2

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
2	0	0	2	20	20	60	100

Course Objectives:

COBJ1	To introduce urban design as a profession that sits at the crossroads of architecture.
COBJ2	To familiarize students with the concept of the public realm.
COBJ3	To familiarize students with the city perception of spaces at various scales.
COBJ4	Familiarize students with planning governance frameworks, various statutory and non-statutory
COBJ5	Introduce them with the implementation processes.

Course Outcomes: Students will be able to

CO1	Explain key definitions, goals, and benefits of town and country planning, and critically evaluate arguments for and against planning
CO2	Interpret foundational planning concepts such as sustainability, rationality, space, place, and planning knowledge in urban and regional contexts.
CO3	Identify types of development plans and apply development control regulations to assess land-use compatibility and conflicts.
CO4	Describe planning governance structures in India and evaluate the influence of globalization and global city concepts on urban planning.
CO5	Analyze urbanization patterns using classical and contemporary urban theories and relate them to land use and land value dynamics.

Course Contents

Module	**Introduction and Scope**	**Hrs. 6**

Relationship between Architecture & Urban Design. Brief review of the evolution of the urban design as a discipline. Broad understanding of urban forms and spaces at various spatial scales.

Module	**Elements of Urban Design**	**Hrs. 6**

Organization of spaces and their articulation in the form of squares, streets, vistas and focal points, Image of the city and its components such as edges, paths, landmarks, street features. Special focus on streets; Expressive quality of built forms, spaces in public domain

Module	**Typologies and Procedures**	**Hrs. 6**

Concepts of public and private realm, Different types and procedures of urban design interventions their scale relationships, constraints and challenges of urban design in democratic versus authoritarian settings. (NIMBY).

Module	**Governance of Planning**	**Hrs. 6**

Local government in India; District Planning Committees and Metropolitan Planning Committees; Introduction to Internationalization and globalization of planning: meanings and forms of globalization; Characteristics of a global city; Principles for planning for a global city.		
Module	**Urban Design and Sustainability**	**Hrs.6**
Sustainability concept, Relationship of urban design with economic, environmental, and social sustainability. Urban renewal and urban sprawl. Concepts of Transit Oriented Development, Compact City, Healthy City and Walkable City.		
Text Books:		
1	Larice, M. and Macdonald, E. Ed. (2013). The Urban Design Reader. 2nd Ed. The Routledge Urban Reader Series, Abingdon, Oxon: Routledge.	
2	Carmona, M., Heath, T., Oc, T. and Tiesdell, S. (2010). Public Places Urban Spaces. Oxford: Architectural Press.	
3	Lang, J. T. (2005). Urban Design: A Typology of Procedures and Products. Oxford: Elsevier/Architectural Press.	
4	Moughtin, C., Cuesta, R., Sarris, C. and Signoretta, P. (2003). Urban Design - Methods and Techniques. Oxford; Architectural Press.	
Reference Books:		
1	Watson, D., Plattus, A. and Shibley, R. (2003). Time-Saver standards for urban design. New York: McGraw Hill.	
2	Lynch, K. (1960). The image of the city. MIT Press.	

SUBJECT CODE	MDM -II	CREDITS
25AFMDPLAN406B	Town and Urban Planning	2

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
2	0	0	2	20	20	60	100

Course Objectives	
COBJ1	Understand the necessity, scope, and historical evolution of town planning
COBJ2	Study contributions of eminent town planners and planning theories
COBJ3	Learn basic planning principles related to residential layouts
COBJ4	Understand elements of towns
COBJ5	Gain knowledge of planning legislation and planning approaches
Course Outcomes: Students will be able to	
CO1	Explain the evolution and principles of town planning
CO2	Describe the contributions of major town planners
CO3	Analyze residential layouts and neighborhood planning concepts
CO4	Apply knowledge of zoning, building bye-laws, urban roads, and landscape planning for effective town development.
CO5	Interpret town planning legislation (MRTP Act, Land Acquisition Act) and assess planning methodologies for urban and rural development.

Course Contents

Module 1	**Scope of Town Planning**	**Hrs. 6**
Necessity and scope of Town Planning, Brief history, Greek and Roman Towns, Planning in ancient India - Indus Valley Civilization, Vedic Period, Buddhist Period, Medieval Period, Mogul Period, British Period, Post-		
Module 2	**Town Planning-History**	**Hrs. 6**
Town Planners in Modern Era such as Sir Patrick Geddes, Sir Ebenezer Howard, Clarence stein, Sir Patrick Abercrombie, Le Corbusier, Present Status of Town Planning in India, Efficiency Measures, Planners skills, Integrated Area Planning in India. Distribution and sizes of Settlements		
Module 3	**Basic Planning**	**Hrs. 6**
Layout of Residential Units, Neighborhood Unit Planning, Radburn Plan, Grid Iron Pattern, Shoe String Development, Growth Pattern of Towns, Concentric Satellite, Ribbon Development, Scattered growth		
Module 4	**Elements of Town**	**Hrs. 6**
Elements of Town, Various Zones, Development Control Rules and Building Bye Laws, Urban Roads: Objective, Classification, Road Networks, Data Collection Surveys, Analysis of data. Town aesthetics, Landscape Architecture, Suitability of Trees, Treatment of Traffic Islands, Open Spaces Walkways Public Sit-outs, Continuous Park System,		
Module 5	**Town Planning Act**	**Hrs.6**

Town Planning works with reference to M.R.T.P. Act, Land Acquisition Act, Necessity and procedure of acquisition Village Planning, Multilevel Planning, Decentralization Concepts, Rural Developments, Planning Methodology, Growth Centre Approach, Area Development Approach, Integrated Rural Development Approach	
Text Books:	
1	Hiraskar G.K. (2018) "Town and country Planning"DhanpatRai Publication, N. Delhi
2	Rangawala S.C. (2015) "Town Planning", Charotar Publications, Anand
3	Sundaram K.V. (1978) "Urban and Regional Planning in India", Vikash Publishing House Pvt.
4	MRTP Act 1966 & 2002
5	Land Acquisition Act - 1894
Reference Books:	
1	Eisner S. and Gallion A. (1993) "The Urban Pattern", John Wiley & Sons, N. Delhi

SUBJECT CODE	MDM -III	CREDITS
25AFMDPLAN506A	Real Estate Development and Management	3

Teaching Work Load/week (Hrs.)			Examination Scheme (Marks)				
Theory	Tutorial	Laboratory	Theory	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives

COBJ1	Introduce the fundamentals of land development and real property markets
COBJ2	Develop an understanding of real property valuation principles
COBJ3	Explain land-use restrictions, compensation, taxation, and public ownership policies
COBJ4	Analyze locational factors for different land uses
COBJ5	Provide practical exposure to real estate development practices

Course Outcomes: Students will be able to

CO1	Explain the process of land development and real estate financing
CO2	Apply principles of real property valuation and land economics
CO3	Interpret land-use regulations, compensation mechanisms, and taxation policies
CO4	Analyze suitable locations for residential, commercial, industrial, and institutional uses
CO5	Understand real estate development practices and legal procedures

Course Contents

Module 1	**Developments of Land and Real Property**	**Hrs. 6**

Process of land development, market mechanism and land use pattern; Cost of development; Sources of finance and financial calculations for real estate development.

Module 2	**Real Property Markets**	**Hrs. 6**

Heterogeneity and imperfections, valuation of real property including principles and practices; Private ownership and social control of land; Disposal of land; Land development charges and betterment levy

Module 3		**Hrs. 6**

Land use restrictions, compensation and requisition taxation of capital gain on land versus public ownerships; Economic aspects of land policies at various levels of decision making.

Module 4		**Hrs. 6**

Analysis of location of specific uses like residential, industrial, commercial and institutional in the light of location theories in intra-regional and inter-regional context; Techniques of cost benefit analysis of urban development programme.

Module 5		**Hrs.6**

Case studies of real estate development in public, private, partnership sectors; Real estate as facilitator of development; Development of real estate as a tool for controlling land and property prices; Transaction and renting of real estate, Lease deeds and sale deeds, sale documents, registration; Mortgage and pledging.

Text Books:	
1	Anthony, O., Kenneth, G. (eds.) (2002) Housing Economics and Public Policy, Wiley-Blackwell, Oxford.
2	Bhargava, M.L. (2020) Real Estate Regulations and Development, Kamal Publishers, New Delhi.
3	Das, P. and Sharma, D. (2014) Real Estate Finance in India, Sage, New Delhi.
4	Lynn, D.J. and Wang, T. (2010) Emerging Market Real Estate Investment: Investing in China, India, and Brazil, Wiley, Oxford.
5	Mike, E.M., Gayle, B. and Marc, A.W. (2000) Real Estate Development: Principles and Process, Urban Land Institute, Washington, D.C.
Reference Books:	
1	Mittal, S. (2016) The ABC of Real Estate in India, Falcon Publishing.
2	Neve, G.D. and Donner, H. (2015) Revisiting Urban Property in India, Journal of South Asian Development, Vol. 10, No. 3, pp. 255-266.
3	Jain, A.K. (2021), Housing for All, Khanna Publishing House.

SUBJECT CODE	MDM -III	CREDITS
25AFMDPLAN506B	Planning Legislation	3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Theory	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives	
COBJ1	Introduce the concept, sources, and significance of law
COBJ2	Develop understanding of professional planning practice
COBJ3	Explain the evolution and framework of planning legislation in India
COBJ4	Familiarize students with legal mechanisms for land acquisition and assembly
COBJ5	Instill ethical values and professional responsibility
Course Outcomes: Students will be able to	
CO1	Explain sources of law and interpret legal terms relevant to planning, and assess the importance of statutory backing in urban and regional planning.
CO2	Apply professional practice principles related to contracts, tenders, project proposals, fees, and office management in planning assignments.
CO3	Analyze planning legislation and constitutional provisions, including the 73rd and 74th Amendments, and their implications for development control.
CO4	Evaluate land acquisition and land assembly frameworks using legal principles and case studies to understand planning disputes and resolutions.
CO5	Address ethical dilemmas in planning practice through reflective and deliberative approaches involving negotiation, stakeholder participation, and professional conduct.

Course Contents

Module 1	**Concept of Law**	**Hrs. 6**

Sources of law including custom, legislation and precedent; Meaning of the term of law, legislation, ordinance, bill, act, regulations and byelaws; Significance of law and its relationship to urban and regional planning; Benefits of statutory backing for planning at all levels.

Module 2	**Professional Engagement and Office Administration**	**Hrs. 6**

Tenders, Contracts, Formulation of Project Proposals., Professional fees for different types of planning practice, setting up of planning firms, official correspondence, office management practices. Concepts and contents of the Indian Constitution, article 21; Rights and their implications for planning; Fundamental provisions regarding property rights; Overview of legal tools connected with urban and regional planning and development; Model town planning laws.

Module 3	**Planning Law and its interface with other laws affecting development**	**Hrs. 6**

Evolution of town planning legislation, town planning laws, town planning as a state subject; 73rd and 74th amendment and its implications for planning law; Current amendments in planning and development laws; Related laws such as environment and infrastructure laws, heritage, housing, real estate, property law and their interaction with planning law.

Module 4	**Statutory Framework for Land Acquisition and Assembly**	**Hrs. 6**

Laws related to land assembly by public and private parties; Land acquisition legislations, eminent domain, police powers and concept of public purpose; Case studies highlighting nature of contentions, parties in dispute and decisions in specific planning disputes.

Module 5	**Ethical Planning Practice and Planning Engagement century**	**Hrs.6**

Human values and moral reasoning, Planning practice and ethical dilemmas, resolution of ethical dilemmas, code of professional conduct. Concept of reflective and deliberative practice, Study of decision making, role of different interest groups, deliberation and negotiation large planning project or policy modification requiring approvals.

Text Books:

1	Lakshimikanth, M. (2007) Indian Polity, Tata McGraw Hill, New Delhi
2	Bhattacharya, M. (2001) New Horizons of Public Administration, Jawahar Publishers and Distributors, Gurgaon
3	Needham, B. (2006) Planning, Law and Economics: An investigation in the rules we make for using land, Routledge, London.
4	McAuslan, P. (2019) Bringing the Law Back In: Essays in Land, Law and Development, Routledge, London

Reference Books:

1	Urban Planning Theory and Practice by M. Rao
2	Planning Legislation and Professional Practice for AITP Students (Reader by B.K. Sengupta/ITPI)

SUBJECT CODE	MDM -IV	CREDITS
25AFMDPLAN606A	Disaster Mitigation and Management	3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives.	
COBJ1	Understand the concept of disaster management.
COBJ2	Identify and classify different types of disasters.
COBJ3	Explain disaster mitigation strategies.
COBJ4	Study the legal and institutional framework.
COBJ5	Apply architectural and planning interventions.
Course Outcomes: Students will be able to	
CO1	Define disaster management and explain its role in preparedness, response, and recovery of disasters.
CO2	Classify various types of disasters and analyze their causes, impacts, and consequences on society and infrastructure.
CO3	Evaluate disaster prevention, preparedness, and recovery strategies for effective risk reduction.
CO4	Interpret the provisions of the Disaster Management Act and understand institutional mechanisms for disaster response.
CO5	Apply architectural and planning measures such as fire safety rules, exits, and building regulations to mitigate disaster risks.

Course Contents

Module 1	**Disaster Management introduction**	**Hrs. 6**
The organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.		
Module 2	**Types of Disasters**	**Hrs. 6**
Natural disasters: including floods, hurricanes, earthquakes and volcano eruptions that have immediate impacts on human health and secondary impacts causing further death and suffering from (for example) floods, landslides, fires, tsunamis.		
Module 3	**Environmental emergencies**	**Hrs. 6**

including technological or industrial accidents, usually involving the production, use or transportation of hazardous material, and occur where these materials are produced, used or transported, and forest fires caused by humans.		
Module 4	**Complex & Pandemic Emergencies**	**Hrs. 6**
Complex emergencies: involving a break-down of authority, looting and attacks on strategic installations, including conflict situations and war. Pandemic emergencies: involving a sudden onset of contagious disease that affects health, disrupts services and businesses, brings economic and social costs.		
Module 5	**Remedies for disaster**	**Hrs.6**
Disaster prevention, Disaster preparedness, Disaster recovery. The Disaster Management Act. Architectural intervention to prevent and for remedial measures in case of any disaster like: Observance of Fire rules, Exits and requirement, etc.		
Text Books:		
1	Disaster Management in India -Challenges & Strategies by R.K.Dave	
2	Disaster Management by O.S. Dagur	
3	Disaster Management E-Book by Harsh K. Gupta	
Reference Books:		
1	Natural Hazards and Disaster by NCERT	

SUBJECT CODE	MDM -IV Project Management	CREDITS
25AFMDPLAN606B		3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives	
COBJ1	Understand the fundamentals of Project Management
COBJ2	Explain the roles and responsibilities of a Project Manager
COBJ3	Identify, initiate, and evaluate projects using pre-feasibility and feasibility study
COBJ4	Apply systematic project planning methods
COBJ5	Develop and analyze project schedules using network techniques
Course Outcomes: Students will be able to	
CO1	Explain basic concepts, need, knowledge areas, processes, and life cycle of Project Management for engineering applications.
CO2	Analyze the role of the Project Manager, project phases, management principles, and the impact of delays on project completion
CO3	Perform project identification, initiation, feasibility analysis, and determine project viability using break-even analysis.
CO4	Prepare project plans using structured approaches such as WBS, team coordination, and project planning processes.
CO5	Construct and analyze PERT and CPM networks to determine critical paths, project duration, variability, and project costs.

Course Contents

Module 1	**Basics of Project Management**	**Hrs. 6**
Introduction, Need for Project Management, Project Management Knowledge Areas and Processes, The Project Life Cycle.		
Module 2	**Project Management Processes**	**Hrs. 6**
The Project Manager (PM), Phases of Project Management Life Cycle, Project Management Processes, Impact of Delays in Project Completions, Essentials of Project Management Philosophy, Project Management Principles.		
Module 3	**Project Identification and Selection**	**Hrs. 6**
Introduction, Project Identification Process, Project Initiation, Pre-Feasibility Study, Feasibility Studies, Project Break-even point.		
Module 4	**Project Planning**	**Hrs. 6**

Introduction, Project Planning, Need of Project Planning, Project Life Cycle, Roles, Responsibility and Team Work, Project Planning Process, Work Breakdown Structure (WBS).		
Module 5	**PERT and CPM**	**Hrs.6**
Introduction, Development of Project Network, Time Estimation, Determination of the Critical Path, PERT Model, Measures of variability, CPM Model, Network Cost System.		
Text Books:		
1	Construction Project Management - K.K. Chitkara	
2	Projects Planning by Prasanna Chandra	
3	Construction Engineering & Management by Girija K. IIT Delhi	
Reference Books:		
1	Construction Technology by Chudley R. Vol. I to IV	
2	Building Construction Illustrated – Ching Francis D.K.	

SUBJECT CODE	MDM -V	CREDITS
25AFMDPLAN706A	Sustainable Building Planning	3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives	
COBJ1	To Understand the relationship between Natural environment and Built environment
COBJ2	To Study the effect of architectural development on natural resources
COBJ3	To study and understand passive methods of environmental control
COBJ4	To study and understand sustainable building design processes
COBJ5	To evaluate and apply sustainable building strategies over design

Course Outcomes: Students will be able to	
CO1	Understanding Natural environment and Built environment
CO2	Understanding effect of architectural development on natural resources
CO3	Understanding passive methods of environmental control
CO4	Understanding sustainable building design processes
CO5	Understanding sustainable building strategies over design

Course Contents

Module 1	**Environment**	**Hrs. 6**

Natural Environment, Ecology and ecosystems, Bio diversity and co-existence Relationship and co-existence of Built & Natural Environments Building Types & Lifestyles in different geographic zones and climatic zones.

Module 2	**Sustainable Development**	**Hrs. 6**

Concepts of sustainable development, Renewable resources, Conservation and generation of energy, Water cycle and its management. Concepts of Sustainable Building, Social, Economic and Environmental aspects, Different types of Indian and International Rating Systems.

Module 3	**Climatology and Building Sciences**	**Hrs. 6**

Micro climate and Macro climate, Energy flow in building Human comfort, Traditional methods for achieving comfort, Passive Methods of control Natural lighting, Solar Radiations and Architecture, Air flow patterns inside buildings and in building layouts, Natural ventilation

Module 4	**Energy Efficiency**	**Hrs. 6**

Energy Efficient Design (Achieving Efficiency through design), Energy Conservation Building Codes (ECBC) Codes 2007 Building Envelope, Understanding and calculation of energy consumption of a House, office building Learning Different Energy Simulation Techniques (Energy / Lighting), Advanced Energy Efficient Standards and Systems		
Module 5	**Evaluation of sustainability**	**Hrs.6**
Post occupancy evaluation of case studies of student's thesis work, Urban sustainability, Impacts of built environment on its surroundings.		
Text Books:		
1	Green Building Illustrated By Francis D.K.Ching	
2	Sustainable Building Design Manuals (TERI): Volumes I-V	
3	The Barefoot Architect: A Handbook for Green Building (Nader Khalili)	
Reference Books:		
1	Sustainable Construction: Green Building Design and Delivery by Charles J. Kibert:	
2	Handbook of Green Building Design and Construction by Sam Kubba	

SUBJECT CODE	MDM -V	CREDITS
25AFMDPLAN706B	Appropriate Building Technologies	3

Teaching Work Load/week (Hrs.)				Examination Scheme (Marks)			
Theory	Tutorial	Laboratory	Total	ISE	MSE	ESE	Total
3	0	0	3	20	20	60	100

Course Objectives	
COBJ1	Introduce the concept of appropriate building techniques
COBJ2	Develop understanding of appropriate technologies
COBJ3	Study earth as a construction material.
COBJ4	Understand bamboo as a sustainable building material.
COBJ5	Familiarize students with the use of recycled and waste materials.
Course Outcomes: Students will be able to	
CO1	Explain various appropriate building techniques
CO2	Identify and apply appropriate technologies and prefabricated components
CO3	Analyze properties and applications of earth-based construction systems
CO4	Apply bamboo construction techniques
CO5	Evaluate the use of recycled and waste materials in construction

Course Contents

Module 1	**Types of Appropriate building techniques**	**Hrs. 6**

Introduction Types of Appropriate building techniques like, Earth, Flyash, Bamboo, Thatch, Ferro-cement, etc. Advantages of Appropriate building techniques over conventional methods. Alternative methods of construction related to different materials and their comparison. Upgradation, modification and revision of various methods of construction.

Module 2	**Appropriate technologies**	**Hrs. 6**

Appropriate technologies as evolved from contexts through the practice of Indian and International Architects. Systems and techniques developed in Research labs. Cost Reduction Techniques – Planning aspects. Prefabricated building components

Module 3	**Components of earth**	**Hrs. 6**

Earth: gravel, sand, silt and clay. Characteristics, advantages and disadvantages, needs and usage of various methods of construction like walling, flooring and roofing techniques. Composite materials made from earth like rammed earth, compressed stabilized earth blocks, stacked earth, sun dried clay bricks, and steam cured blocks, Wattle and Daub. Filler slab, Jack arch roof.		
Module 4	**Bamboo**	**Hrs. 6**
Characteristics, advantages and disadvantages, needs and usage of various methods of construction like walling, flooring and roofing techniques. Preservation of bamboo, bamboo tiles, shingles, bamboo joints.		
Module 5	**Recycled Waste Materials**	**Hrs.6**
Types of waste used in construction. Benefits of using recycled waste materials. Materials made out from waste paper, wood, plastic bottles, plastic bags, earthen materials, steel, aluminum, copper, bricks, gypsum, straw, and wool etc, Techniques of using these materials in building construction.		
Text Books:		
1	Lewis Davidson Gotlieb, Environment and design in housing, The Mc.Millan Corp, New York	
2	Housing and building in hot-humid and hot dry climate	
3	Low-cost housing in developing countries/ Mathua	
Reference Books:		
1	A.G MadhavaRao and D.S Ramachandra Murthy : Appropriate Technologies for Low cost housing.	