

**DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY,  
U.P., LUCKNOW**



**SYLLABUS**

**For**

**MASTER OF PLANNING  
(Infrastructure Planning and Management)**

**(Effective from the Session 2024-25)**

**Faculty of Architecture & Planning, Lucknow, Tagore Marg  
Campus-226007**

**Masters of Planning (Infrastructure and Planning) I semester**

**SCHEME OF TEACHING AND EXAMINATION**

**1st SEMESTER**

S. NO.	SUBJECT CODE	NAME OF THE SUBJECT	PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER (hrs)
			LECTURE	TUTORIAL	PRACTICAL/ STUDIO	INTERNAL ASSESSMENT			ESE					
						CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	MIPM - 101	Planning History and Theory	2	1	0	20	30	50	50	0	50	100	3	3
2	MIPM - 102	Socio-economic Basis of Planning	2	1	0	20	30	50	50	0	50	100	3	3
5	MIPM- 103	Planning Techniques	2	1	0	20	30	50	50	0	50	100	3	3
4	MIPM - 104	Infrastructure and Transport Planning	2	1	0	20	30	50	50	0	50	100	3	3
3	MIPM - 105	Housing and Environment Planning	2	1	0	20	30	50	50	0	50	100	3	3
6	MIPM - 106	Planning Studio-I	0	3	7	0	250	250	0	250	250	500	10	-
<b>TOTAL</b>			<b>10</b>	<b>8</b>	<b>7</b>			<b>500</b>			<b>500</b>			
<b>GRAND TOTAL</b>						<b>25</b>						<b>1000</b>	<b>25</b>	

Name of the Subject		Hrs. Per Week * L + T	Credits	Marks		
				Sessional Assessment	End Semester Examination	Total
<b>SECOND SEMESTER</b>						
<b>Core Subjects</b>						
MIPM-201	Project Formulation, Appraisal, Monitoring and Evaluation	2 + 1	3	50	50	100
MIPM-202	Transport Network and Terminals	2 + 1	3	50	50	100
MIPM-203	Infrastructure Pricing and Financing	2 + 1	3	50	50	100
MIPM-204	Infrastructure Development Policies	2 + 1	3	50	50	100
MIPM-205	Information Systems for Infrastructure Planning	2 + 1	3	50	50	100
MIPM-206	Studio					
	Studio course	1+0+9	10	250	250	500
<b>Total</b>			<b>25</b>			<b>1,000</b>

<b>THIRD SEMESTER</b>						
<b>Core Subjects</b>						
MIPM-301	Infrastructure for Regional Development	2 + 1	3	50	50	100
MIPM-302	Telecommunications and Information Technology	2 + 1	2	50	50	100
MIPM-303	Regional Development Policies	2 + 1	3	50	50	100
MIPM-304	Research Methods and Quantitative Techniques	2 + 1	3	50	50	100
MIPM-305	Planning for Special Areas and Mega Projects	2 + 1	3	50	50	100
MIPM-306	Studio					
	<b>Studio Course</b>	1+0+4	5	250	250	250
MIPM-307	Professional Training	-	-	-	-	-
Sub-Total		1 +0+ 9	10	250	250	500
Total			<b>25</b>			<b>1000</b>

<b>FOURTH SEMESTER</b>						
<b>Core Subjects</b>						
MIPM-401	Infrastructure Management	2 + 1	3	50	50	100
MIPM-402	Thesis	-----	22	450	450	900
<b>Total</b>			<b>25</b>			<b>1,000</b>

**MIPM-307 is a compulsory zero credit training, Viva will be conducted to assess the performance**

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## M. Plan in Infrastructure Planning and Management

### FIRST SEMESTER

#### MIPM-101: PLANNING HISTORY AND THEORY

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

#### Module 1: Evolution of City Building

Relevance of the study of evolution of settlements; Hunter, gatherer, farmer and formation of organized society; Cosmological and other influences, origins and growth of cities, effects of cultural influence on physical form; Human settlements as an expression of civilizations; Basic elements of the city; Concepts of space, time, scale of cities.

#### Module 2: Planning History

Town planning in ancient India; Medieval, renaissance, industrial and post-industrial cities; City as a living spatial entity; Concepts of landmark, axis, orientation; City form as a living space; City as a political statement: New Delhi, Chandigarh, Washington D.C. Brasilia etc; Contribution of individuals to city planning: Lewis Mumford, Patrick Geddes, Peter Hall, etc; Dynamics of the growing city, impact of industrialization and urbanization, metropolis and megalopolis.

#### Module 3: Definitions and Objectives of Planning

Definitions of town and country planning; Orthodoxies of planning; Goal formulation, objective, scope, limitations; Sustainability and rationality in planning; Components of sustainable urban and regional development.

#### Module 4: Theories of City Development and Planning Theories

Theories of city development including Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory and other latest theories; Land use and land value theory of William Alonso; Ebenezer Howard's Garden City Concept; and Green Belt Concept; City as an organism: a physical, social, economic and political entity; Emerging Concepts: global city, inclusive city, safe city, etc.; City of the future and future of the city; Shadow cities, divided cities; Models of planning: Advocacy and Pluralism in Planning; Systems approach to planning: rationalistic and incremental approaches, mixed scanning and middle range planning; Equity planning; Political Economy Model; Types of development plans, plan making process.

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## **MIPM -102: SOCIO - ECONOMIC BASIS FOR PLANNING**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Nature and Scope of Sociology**

Sociological concepts and methods, man and environment relationships; Socio-cultural profile of Indian society and urban transformation; Tradition and modernity in the context of urban and rural settlements; Issues related to caste, age, sex, gender, health safety, and marginalized groups; Displacement, resettlement and rehabilitation due to compulsory land acquisition.

### **Module 2: Community and Settlements**

Social problems of slums and squatters communities, urban and rural social transformation and their impact on social life, safety, security; Crimes in urban areas and their spatial planning implications, social structure and spatial planning; Role of socio-cultural aspects on growth patterns of city and neighbourhood communities; Social planning and policy, and community participation; Marginalization and concepts of inclusive planning, and gender concerns in planning. Settlement Policy: National Commission on Urbanization, Rural Habitat Policy and experiences from developing countries regarding settlement structure, growth and spatial distribution.

### **Module 3: Elements of Micro and Macro Economics**

Concepts of demand, supply, elasticity and consumer markets; concept of revenue costs; Economies of scale, economic and social costs, production and factor market; Different market structures and price determination; market failures, cost-benefit analysis, public sector pricing; Determinants of national income, consumption, investment, inflation, unemployment, capital budgeting, risk and uncertainty, and long-term investment planning.

### **Module 4: Development Economics and Lessons from Indian Experiences**

Economic growth and development, quality of life; Human development index, poverty and income distribution, employment and livelihood; Economic principles in land use planning; Policies and strategies in economic planning, balanced versus unbalanced growth, public sector dominance; changing economic policies, implications on land.

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## **MIPM -103: PLANNING TECHNIQUES**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Survey Techniques and Mapping**

Data base for physical surveys including land use, building use, density, building age, etc., and socio-economic surveys; Survey techniques; Land use classification or coding and expected outputs; Techniques of preparing base maps including understanding the concepts of scales, components and detailing for various levels of plans like regional plan, city plan, zoning plan, and local area plan.

### **Module 2: Analytical Methods**

Classification of regions, delineation techniques of various types of regions, analysis of structure of nodes, hierarchy, nesting and rank size; Scalogram, sociogram, etc.; Planning balance sheet; Threshold analysis; Input output analysis, SWOT analysis

### **Module 3: Demographic Methods**

Methods of population forecasts and projections; Lorenz Curve, Ginni Ratio, Theil's index, ratios: urban – rural, urban concentration, metropolitan concentration; Location dimensions of population groups – social area and strategic choice approach – inter connected decision area analysis.

### **Module 4: Planning Standards**

Spatial standards, performance standards and benchmarks, and variable standards; UDPFI guidelines, zoning regulations and development control rules and regulations.

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## **MIPM-104: INFRASTRUCTURE AND TRANSPORT PLANNING**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Role of Infrastructure in Development**

Elements of Infrastructure (physical, social, utilities and services); Basic definitions, concepts, significance and importance; Data required for provision and planning of urban networks and services; Resource analysis, provision of infrastructure, and land requirements; Principles of resource distribution in space; Types, hierarchical distribution of facilities, Access to facilities, provision and location criteria, Norms and standards, etc.

### **Module 2: Planning and Management of Water, Sanitation and Storm Water**

Water – sources of water, treatment and storage, transportation and distribution, quality, networks, distribution losses, water harvesting, recycling and reuse, norms and standards of provision, institutional arrangements, planning provisions and management issues; Sanitation – points of generation, collection, treatment, disposal, norms and standards, grey water disposal, DEWATS, institutional arrangements, planning provisions and management issues.

Storm water – rainfall data interpretation, points of water stagnation, system of natural drains, surface topography and soil characteristics, ground water replenishment, storm water collection and disposal, norms and standards, institutional arrangements, planning provisions and management issues.

### **Module 3: Planning and Management of Municipal Wastes, Power and Fire**

Municipal and other wastes – generation, typology, quantity, collection, storage, transportation, treatment, disposal, recycling and reuse, wealth from waste, norms and standards, institutional arrangements, planning provisions and management issues.

Power – Sources of power procurement, distribution networks, demand assessment, norms and standards, planning provisions and management issues. Fire – History of fire hazards, vulnerable locations, methods of fire fighting, norms and standards, planning provisions and management issues.

### **Module 4: City Development and Transport Infrastructure Planning, Management and Design**

Role of transport, types of transport systems, evolution of transport modes, transport problems and mobility issues; Urban form and Transport patterns, land use – transport cycle, concept of

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accessibility; Hierarchy, capacity and geometric design elements of roads and intersections; Basic principles of Transport infrastructure design; Traffic and transportation surveys and studies, traffic and travel characteristics; Urban transport planning process – stages, study area, zoning, data base, concept of trip generation Transport, environment and safety issues; principles and approaches of traffic management, transport system management.

## **MIPM 105 : HOUSING AND ENVIRONMENTAL PLANNING**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Concepts and Definitions**

Shelter as a basic requirement, determinants of housing form, Census of India definitions, Introduction to policies, housing need, demand and supply, dilapidation, structural conditions, materials of constructions, housing age, occupancy rate, crowding, housing shortage, income and affordability, poverty and slums, houseless population

Various housing typologies viz. traditional houses, plotted development, group housing, multi-storied housing, villas, chawls, etc., slums and squatters, night shelters, public health issues related to housing, various theories of housing, concept of green housing, green rating of housing projects.

### **Module 2: Social and Economic Dimensions**

Housing as social security, role of housing in development of family and community well being, status and prestige related to housing, safety, crime and insecurity, deprivation and social vulnerability, ghettoism, gender issues, housing for the elderly.

Contribution of housing to micro and macro economy, contribution to national wealth and GDP, housing taxation, national budgets, fiscal concessions, forward and backward linkages.

### **Module 3: Housing and the City**

Understanding housing as an important land use component of city plan / master plan, considerations for carrying out city level housing studies, projections, land use provisions; Suitability of land for housing, housing stress identification, projecting housing requirements, calculating housing shortages, housing allocation.

### **Module 4: Planning for Neighbourhoods**

Approaches to neighbourhood living in traditional and contemporary societies, elements of neighbourhood structure, Planning and design criteria for modern neighbourhoods, norms and criteria for area distribution, housing and area planning standards, net residential density and gross residential density, development controls and building byelaws, UDPFI guidelines, NBC 2005

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provisions and Case studies of neighbourhood planning.

## **MIPM-106 : STUDIO COURSE**

Lecture Hours Per Week	(P) 7+ (T) 3
Credits	10
End Semester Examination	250
Internal Assessment	250
Total Marks	500

### **First Assignment**

#### **Film Appreciation (Individual Assignment)**

Films related to city development and socio-economic issues will be screened for students. The purpose of these films is to educate the students' understanding of various development issues and to absorb them in the planning practice. At the end of the film, a discourse around the film will also be held. After viewing the films, each student is expected to write about its main focus, city / region context, its applicability to Indian environment by answering the given questions in not more than half a page.

### **Second Assignment**

#### **Literature Review (Individual Assignment)**

Each student is expected to read the article given from a journal / book and write a summary of not more than a page (250 words only) highlighting the problem, approach, methodology, analysis, how the author arrived at the conclusion and its relevance to Indian context. There will be a negative marking for writing the same text as in the original (that is copying from the original text given to them).

### **Third Assignment**

#### **Area Appreciation (Group Assignment)**

The aim of the area appreciation exercise is to enable the students to understand and contextualize the location of the area in relation to the city, zone and area in which the particular place is situated. This is done in relation to the socio-economic, spatial and cultural characteristics of that city, zone, location, etc. The main purpose is to make the students appreciate the locational attributes of land parcels for future development in a city.

Due to the size of the area, this exercise is done in groups of students being assigned to a particular area. The following planning issues at area level should be identified:

- Review of the Master Plan / Zonal / Area plan in relation to the selected areas.
- Appreciation / Analysis of ward level data.
- Perception of areas in terms of legal / illegal / authorized / unauthorized, Slums, Urban Aesthetics.
- Social Categorizations of people - Type of population living, people's perception about area and its planning problems.

### **Fourth Assignment**

#### **Site Planning (Individual Assignment)**

Site planning is a process whereby the optimum utilization of potential of site is considered recognizing the constraints the site has. It uses 3 dimensional space of the site and the associated locational advantages, human activities and the regulations that are assigned to a particular site.

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The site is developed using a set of standards / norms in a given context which varies from location to location. A student is expected to understand the intricacies and interface between various variables such as soil conditions, topography, environmental dimensions, location, spatial standards applicable to the site, etc.

### **Fifth Assignment**

#### **Local Area Development Plan (Group Assignment)**

A City is a multi-dimensional, dynamic and a futuristic space. Understanding city involves appreciating this multi direction, and include them in the city making process. A job of physical planner does not merely understand the current conflict in development but to emerge out of this and to come out with a vision for the city. To arrive at this vision, a planner needs to understand the dynamics of various components of the city and how and what level interventions can be made to achieve that vision.

A group of students are expected to study an identified local area in terms its present problems and issues and project a futuristic vision in terms of scenario building.

## **SECOND SEMESTER**

### **MIPM-201 : PROJECT FORMULATION, APPRAISAL, MONITORING AND EVALUATION**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

#### **Module 1: Basics of Project Formulation**

Concepts of a project; Meaning and significance of project formulation, monitoring and evaluation in urban planning; Classification of projects; Parameters and components of project formulation; Approaches of project formulation.

#### **Module 2: Elements and Techniques of Project Formulation**

Elements of project formulation techniques; Life cycle of a project; Stages of project formulation and their significance: identification of a project, techno-economic analysis, feasibility analysis, design and network analysis; Project appraisal and report; Cost-effectiveness, discounted cash-flow analysis.

Network techniques of project management: network logic, rules, forms of network, Critical Path Method (CPM) and Project Evaluation and Review Technique (PERT), Scheduling and Gantt chart, time estimates and uncertainty in time estimates, degree of variability and probability of completion.

#### **Module 3: Projection Evaluation**

Project evaluation: meaning, objective and criteria of project evaluation; Stages and steps of project evaluation; Techniques of project evaluation; Cost-benefit analysis; Financial cost-benefit analysis: terminal cash-flow analysis, treatment of depreciation, salvage value, working capital, time value of money and rate of return; Social cost-benefit analysis of public and private projects; Efficiency and equity trade - off, Measurement of direct and indirect costs and benefits.

#### **Module 4: Computer Application in Project Formulation**

Computer application in project formulation, appraisal, monitoring and evaluation: types of packages: MS Project and Time line and its relevance; Application of cost and benefit analysis in developing countries – Case studies in transportation project, urban and rural facilities and utilities; Infrastructure development under JNNURM, NCR and Growth Centers.

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## **MIPM-202 : TRANSPORT NETWORKS AND TERMINALS**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Basics of Transport Network and Terminals**

Transport networks and terminals: definitions, scope, relationships and their importance in infrastructure planning in urban and regional context; Integration of networks and terminals with other components of transportation; Characteristics and types of networks and terminals: urban and regional. Concepts, components, importance, norms and design considerations for terminal design: bus, rail, freight transport, air.

### **Module 2: Road Hierarchy**

Road network hierarchy: urban and regional; Concepts, types, elements, norms, design considerations and importance of road geometry; Road side furniture; Intersections and parking in infrastructure planning for road transportation.

### **Module 3: Road Design Norms and Standards**

Elements, norms, design considerations for rail, water and air transport network; Coordination and integration between road, rail, water and air transport network.

### **Module 4: Traffic Signs**

Traffic signs, signals and markings: their types and importance as infrastructure, norms and design considerations; Intelligent transport system: concept, need and importance in transport system management.

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## **MIPM-203: INFRASTRUCTURE PRICING AND FINANCING**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Introduction to Public Finance**

Meaning and scope of public finance; Sources of public revenue: their nature, scope and limitations; Public borrowings: its objectives, form and scope; Public debt: importance, scope and problems; Public financial institutions: their role and contribution in infrastructure development; Deficit financing; principles and problems of federal finance; Central and state governments financial relations; Central Finance Commission: its role and recommendations.

### **Module 2: Private Finance**

Meaning, scope and forms of private finance; Private debt and market borrowings: objectives, scope and related problems; Loans from banks and financial institutions: prospects and limitations.

### **Module 3: Financing and Cost Components of Infrastructure**

Financing infrastructure development: tax and non-tax revenue of Development Agencies; Loans and grants from financial institutions; Remuneration projects; Making infrastructure development self financing; Privatization and role of private finance in infrastructure development, Public – Private Partnership (PPP).

Cost components of infrastructure development; Socio-economic cost benefit analysis; Cost recovery and affordability; Subsidy and cross-subsidy; Principles of maximum social advantage. Pricing of infrastructure – its rationale and parameter/components; Principles of determining cost and price of infrastructure development to be charged from consumers/users.

### **Module 4: Financial Resource and Local Governments**

Financial resources of local bodies – their nature, scope and limitations; Infrastructure development expenditure of Local Governments; Causes and effects of poor finance health of Municipal Bodies; Various measures to augment financial resources of local bodies; State Finance Commission: its role and recommendations.

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## **MIPM-204: INFRASTRUCTURE DEVELOPMENT POLICIES**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Introduction to Infrastructure Policies**

Infrastructure Development policy, definition, components, constitutional provisions, central list, state list and concurrent list of jurisdiction, acts, institutional setup, regulatory mechanism, traditional approaches, new approach-public private partnership, infrastructure finance-nature and options. Special Economic Zones: meaning, types, configuration, roles of government and private sector, global scenario, SEZ policy in India,

### **Module 2: Energy and Power Policies**

Energy: Electric power- Current scenario, legal and regulatory framework, electricity act 2003 and related rules, institutional reforms, PPP in electricity sector, FDI, programmes in electrification, 11th five year plan

### **Module 3: Transport Policies**

Transport policy framework, importance of transport policy, railways, roads and surface transport, ports, civil aviation, 11th five year plan provisions

### **Module 4: Telecommunication Policy**

Importance of telecommunications, new telecom policy of India, TRAI, FDI in telecommunications, rural telecommunications, 11<sup>th</sup> Five Year Plan and telecommunications.

### **Module 5: Water Supply, Drainage, Sanitation, Solid Waste Management Policies:**

Importance of water supply, drainage, sanitation, and solidwaste management, and its relevant policies in India and developed nations. Best practices adopted by different countries and its relevance in Indian context. Policies related to eco-friendly transportation systems .

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## **MIPM-205: INFORMATION SYSTEMS FOR INFRASTRUCTURE PLANNING**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Introduction and Classifications**

Classification of information and data; Information collection - traditional methods, drawbacks, need for alternative technology; Topographical maps – sources, Survey of India (SOI) specifications, Study of SOI grids; Traditional land records - shajra plan, revenue record, jamabandi, intekaal.

### **Module 2: Sources of Data**

Sources of demographic data - census, statistical abstract and national sample survey; Census of India Series and Tables – primary census abstract, town and village directory, housing tables, migration tables. Municipal Property record.

### **Module 3: Aerial Photography and its Applications**

Aerial photography - concepts, types of aerial photography survey, elements of photo interpretation, photogrammetry- thermal photography, sources, costs.

Applications of aerial photography - physiographical analysis, calculation of heights, land use studies, residential densities, networks, areas prone to flooding, encroachments, open spaces, vegetation covers, development controls, site selection, etc.; Small format aerial photography and its application Aerial photography for disasters management.

### **Module 4: Remote Sensing and its Applications**

Remote Sensing - electromagnetic radiation, spectral signatures, satellite imageries, false color composite (FCC), thermal imagery;; Image processing; Sources of satellite imageries, costs. Application of satellite imageries - broad land use; residential types, vegetation covers, Forest cover, Agriculture development, Settlement pattern, urban growth and fringe areas, water tables and resource planning.

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## **MIPM-206 : STUDIO**

Lecture Hours Per Week	(L) 1+ (T) 9
Credits	10
End Semester Examination	250
Internal Assessment	250
Total Marks	500

### **(a) Detailed Project Report for a Project**

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The students shall be required to prepare a Detailed Project Report (DPR) for any component/s of city infrastructure as proposed in the Comprehensive City Infrastructure Development Plan prepared in planning practice problem IPW-572. Efforts shall be made to take up the live projects of city infrastructure. The scope of the DPR shall confine to cover all the stages of project preparation including:

- Identification of activities.
- Activity event chart (Network Chart)
- Cost estimation in detail.
- Time-cost chart (Gantt chart)
- Cost recovery plan (if required)

The DPR so prepared shall be presented suitably in form of maps, charts, diagrams, photographs, sketches supported by detailed report for its submission and final evaluation.

### **(b) Comprehensive City Infrastructure Development Plan**

Students shall be required to undertake the study of existing status of infrastructure in a given town/city. The scope of the study shall confine to the coverage of major components of city infrastructure on following aspects: Physical: Water Supply, Sewerage, Drainage, Solid waste, Street and Street Furniture, etc. Social: Education, Health, Recreation, Community Services, etc. Based on the study and analysis of existing infrastructure, the students shall be preparing a comprehensive City Infrastructure Development Plan. The study along with plan shall be presented suitably in form of maps, charts, diagrams, photographs, sketches supported by detailed report for its submission and final evaluation.

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## **THIRD SEMESTER**

### **MIPM-301 : INFRASTRUCTURE FOR REGIONAL DEVELOPMENT**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

#### **Module 1: Regional Infrastructure**

Definition, types and importance of infrastructure in regional perspective, Status of regional development in India, changing scenario of Infrastructure development, Need for innovative approaches.

#### **Module 2: Integrated Infrastructure Planning**

Integrated infrastructure planning process, Regional infrastructure in the context of different types and level of regions. Norms and Standards, Regional infrastructure constraints, current practices for regional infrastructure development.

#### **Module 3: Planning for Regional Infrastructure**

Planning for infrastructure in a region – Transport, water resources, telecommunication, electricity, energy resources, agriculture market, fertilizer, implements, research and development, extension services. Planning for infrastructure in a village and its hierarchy – physical, social and economic.

#### **Module 4: Policies and Programmes**

Policies and Programs for regional infrastructure development in various Five Year Plans. Regional infrastructure development issues, priorities and strategies in Punjab.

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## **MIPM-302 : TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	2
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Significance of Telecom in Infrastructure Planning**

Definition and significance of Telecommunication and Information in development and their implication in infrastructure planning. Types of telecommunication and information technology, Technological and spatial requirements for telecommunications

### **Module 2: Progress and Demand of Telecommunication**

Telecommunications development in the recent past, Demand Estimation for urban areas and rural areas. Role of IT Capacity Assessment, Spatial requirements for Information Technologies Sector.

Technological Developments and their implications on physical/ infrastructure planning and development. Global System for Mobile (GSM), Code Division Multiple Access (CDMA), Fiber Optics, Cable, and Underground Wiring; Other wireless technologies.

### **Module 3: Role of Private Sector for Telecommunication**

Infrastructure required for communication and information technology development. Role of Private Sector in providing Telecommunication infrastructure. Norms and standards for Telecom Exchanges, GSM towers, CDMA towers, Underground and overhead wiring.

### **Module 4: Telecommunication Regulations and Policies and Pricings.**

Regulation and Policy in the Telecommunication; Telecom Policy of India; Recent Issues and trends in promoting Telecommunication;

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## **MIPM-303 : REGIONAL DEVELOPMENT POLICIES**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Regional Planning and Panchayati Raj**

Regional Planning and Development; Need and Objectives, Sectoral components of Regional development, Emergence and growth of Panchayati Raj Institutions and its significance in Regional development (with particular reference to 73rd constitutional amendment).

### **Module 2: Regional Planning and Five Year Plan**

Regional Development under five year Plans, National level Policies for Agriculture, Rural Industrialization and Entrepreneurship development policies, Regional Networks (Pradhan Mantri Gram Sadak Yojna (PMGSY)), Tourism, Energy and Environment Programmes under Bharat Nirmaan.

### **Module 3: Regional Development Policies and Programme**

Regional Development Policies and Programmes; Land and Soil Management Programmes, Watershed Development Programmes, Forest Development and Management Programmes, Social and Economic Welfare Programmes, National Rural Employment Guarantee Programme, National Rural Health Mission, National Literacy Mission.

### **Module 4: Role of Different Development Agencies national and international**

Role and functions of Agencies involved in Regional Development at National and International Level: World Bank, Asian Development Bank, Council for the Advancement of Peoples Action and Technology (CAPART), National Bank for Rural and Agriculture Development (NABARD), Housing for Urban Development Housing and Urban Development Corporation Limited (HUDCO), Role of NGO's and Community Based Organizations, Role of Co-operative Institutions.

Public participation Models for Regional and Rural Development; Participatory Rural Appraisals, Rapid Rural Appraisals, Social Mapping, Resource mapping, Focus Group Discussions, and Other Methods, Case studies of Participatory Rural Development Initiatives in India.

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## **MIPM-304 : RESEARCH METHODS AND QUANTITATIVE TECHNIQUES**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Definitions and Basics of Research Methods**

Definition and needs of Research, Scientific research and methods, System approach of research, Levels of research: micro and macro. Major steps in the conduct scientific research, induction, deduction and verification. Selection and formulation of research problems, Reviewing of literature.

### **Module 2: Designing Research and Test of Hypothesis**

Designing a research, Pre test and pilot study, Synopsis, and components of synopsis, Hypothesis; meaning, importance and different concept, formulation and testing of hypothesis, Tests of Hypothesis, z-test, t-test, F-test, Chi-square test. Lorenz Curve; Correlation and Regression Analysis - meaning, types, importance, methods of measurement.

### **Module 3: Process of Theorization and Research Compilation**

Definition of Concept, Theory and facts, Process of theorization, Research Compilation and report: contents and style, factors in the organization of a research report, writing of foot notes, quoting styles, references, cross referencing and bibliography.

### **Module 4: Model in Planning and Management**

Meaning and definition of Model, classification of models, Relevance of Growth models and planning models, Difference between growth models and planning models, Process of model application and its scope and limitation, Horrod-Domar Model, Koldar's Model, Mrs. Joan Robinson Model, Solow's Model.

Understanding and evaluation of operational models in terms of their objectives, theoretical structure, mathematical formulation, applications and limitations related: Input-Output Model, Linear Programming, Threshold analysis, simulation of infrastructure. Issues and areas of Infrastructure planning research.

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## **MIPM-305: PLANNING FOR SPECIAL AREAS AND MEGA PROJECTS**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	2
End Semester Examination	50
Internal Assessment	50
Total Marks	100

### **Module 1: Concept of Mega Projects**

Mega projects—concepts: investment based, activity based; Mega projects - types and nature: buildings, roads, environment, irrigation based etc; Related concepts—SEZ, Free Trade Zones, Strategic importance; Mega projects and urban development.

### **Module 2: Urbanization and Mega Projects**

Mega projects and Indian urbanization system: urbanization trends in India and mega projects, guidelines for mega projects at national level, Infrastructure requirements for mega projects; Mega projects and city infrastructure system; Mega projects vis-à-vis city development, Infrastructure requirements for mega projects — specific infrastructures for mega projects.

### **Module 3: Special Areas and Special Area Projects**

Meaning, nature, types and scale of special areas; Special areas as determinant of Urban and Regional Planning and Development; Issues and challenges, resources and constraints of special areas. Infrastructure challenges for the mega special area projects.

Infrastructure Requirements of Contemporary concepts of Special areas : Old City areas, Historic Cores and Heritage based areas, Development of Major access roads of International standards, Areas around Air ports, ports and terminals, Infrastructure policies and programmes for Shopping Malls and Multiplexes, Information Technology Parks, Theme Parks, Special Economic Zone, Free Enterprise Zone, Dry ports and free ports.

### **Module 4: Case Studies Analysis**

Case studies: Preparation of an Infrastructure inventory for a commercial, industrial, institutional, recreational or residential mega projects. Specific Infrastructure details for landscaping around roads— Major arteries, minor and Sector roads, City level parks etc.

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## **MIPM-306 : STUDIO**

Lecture Hours Per Week	(L) 1+ (T) 9*
Credits	10
End Semester Examination	250
Internal Assessment	250
Total Marks	500

### **(a) INFRASTRUCTURE PLAN OF A REGION**

Infrastructure has to be undertaken within the larger developmental perspective. In view of this, the exercise attempts to expose the students with knowledge base related to various sub-section like roads, railways, irrigation, telecom, industrial, agriculture infrastructure, special economic zone, health infrastructure, proper distribution of social facilities and open spaces, consideration for economically weaker section. In addition, issues related to provision of infrastructure services, its costing, financing and Implementation strategies and role of various agencies in realizing the plan are also important. The students will cover various studies (primary and secondary) for the above said sectors to develop perception in understanding and analyzing various issues in the region. After the identification of the problems, potentials, students will formulate an objective and accordingly prepare a detailed infrastructure plan. Students will present a detailed report illustrated with drawing and sketches covering methodology, basis for requirements, norms and standards used for providing the infrastructure for a region.

### **(b) INFRASTRUCTURE PLAN FOR RURAL AREA**

Students will undertake study of a cluster of villages with an objective, to understand the location, spatial and economic linkages of the villages with a focus on the social and physical infrastructure of the villages and also understand the availability and usage of local resources. In the light of above, students will be required to identify the problems and future possibilities for the development of village infrastructure. Students will submit detailed report illustrated with drawing, sketches covering methodology, basis for requirements, norms and standards, used for providing infrastructure for a rural area.

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## **FOURTH SEMESTER**

### **MIPM 401 : INFRASTRUCTURE MANAGEMENT**

Lecture Hours Per Week	(L) 2+ (T) 1*
Credits	3
End Semester Examination	50
Internal Assessment	50
Total Marks	100

#### **Module 1: Definitions of Infrastructure Management**

Meaning and scope of Infrastructure Development Management; Functions, components, stages and principles of Management in relation to Infrastructure Development, Infrastructure Development Issues at National, Regional and Human Settlement (Urban and Rural) levels.

#### **Module 2: Process of Infrastructure Development at National Level**

Process of decision making for Infrastructure development at National level, Infrastructure Development in India; policies, programmes and provisions in the National Five Year Plans, Recommendations of various committees, task forces and commissions from time to time. Various National level organizations related to Infrastructure Development in terms of their background, functions, powers, setup and resources (with some case studies).

#### **Module 3: Process of Decision Making for Infrastructure Development at State and Local Level**

Process of decision making for Infrastructure Development at State level, State policies; programmes and provisions in the various Five Year Plans, various State level organizations related to Infrastructure development in terms of their background, functions, powers, set-up and resources (with some case studies).

Process of decision making for Infrastructure Development at Human Settlements/local Level, Various local level organizations related to Infrastructure Development in terms of their background, functions, powers, set-up and resources (with some case studies).

#### **Module 4: Role of NGOs and Private Organizations**

Role of Non-Government and Private Organizations in Planning and Development of Infrastructure and their relationships with Local and State Governments. Importance and methods of Public-Private Partnership (PPP); Public/Citizen participation in Infrastructure Planning and Development, its scope, methods and limitations.

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## **MIPM-402 : THESIS**

Interaction Hours Per Week	(L) 0+ (T) 22*
Credits	22
External Assessment	450
Internal Assessment	450
Total Marks	900

The main objectives of preparing a thesis is to provide an opportunity to each student to undertake original and independent study/research; to explore in depth and to develop a subject of his/her own choice demonstrating the ability to use effectively the tools of independent investigation and judgment. The theme of the thesis should offer scope to adopt a fresh approach in formulating a concept of developing a methodology, effective and useful in the realm of infrastructure planning. Each student shall prepare thesis on a selected topic under the supervision of a guide. The thesis shall be presented in the form of a report well illustrated by maps, drawings, charts, sketches, photographs, model, etc.

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Ordinances of this course shall be similar to ordinances of MURP course and all amendments there in shall be applicable for this course in ditto

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