

**DEPARTMENT OF ARCHITECTURE AND PLANNING**

# **M.PLAN (HOUSING)**

**Course of Study & Scheme of Examination**

**2016-17**



**Maulana Azad National Institute of Technology**

**Bhopal**

## Scheme

### Integrated First semester (Urban Planning and Housing)

Course no.	Subject	Periods per week		Theory Exam		Credits
		L	T	No	Duration	
CM 511	Introduction to planning	3	-	1	3	3
CM 512	Urban Economics and Sociology	3	-	1	3	3
CM 513	Planning Practices and Legislation	3	-	1	3	3
CM 514	Planning Techniques	3	-	1	3	3
CM 515	Quantitative Research Methods	3	-	1	3	3
CM 516	Project formulation and Appraisal	3	-	1	-	3
CM 517	Geo-Informatics	-	4	-	-	2
CM 518	Planning Studio - I	-	8	-	-	4
	<b>Total</b>	<b>18</b>	<b>12</b>			<b>24</b>

\* **Note:** CM refers to common subjects for M. Plan (Housing) and M. Plan (Urban Planning)

Professional internship of **4 Weeks** to be taken up in the semester break after first semester – office / agency finalized by the department.

### Second Semester

Course no.	Subject	Periods per week		Theory Exam		Credits
		L	T	No.	Duration	
HU 521	Real Estate Planning	3	-	1	3	3
HU 522	Infrastructure planning	3	-	1	3	3
HU 523	Housing finance	3	-	1	3	3
HU 524	Planning and development of informal sector	3	-	1	3	3
HU 531-537	Elective - I	3	-	1	3	3
HU 541-545	Elective - II	3	-	1	3	3
HU 525	Planning Studio-II	-	12	-	-	6
	<b>Total</b>	<b>18</b>	<b>12</b>			<b>24</b>

\* **Note :** Professional internship of **6 Weeks** to be taken up in the semester break after second semester – office / agency finalized by the department.

### Third Semester

Course no.	Subject	Periods per week	Theory Exam		Credits
			No	Duration	
HU 611	Project Phase – I	6	-	-	18
HU 612	Training	-	-	-	2
	<b>Total</b>	<b>6</b>			<b>20</b>

### Fourth Semester

Course no	Subject	Periods per week	Theory Exam		Credits
			No	Duration	
HU 621	Project Phase – II	6	-	-	22
	<b>Total</b>	<b>6</b>			<b>22</b>

### List of Electives

#### Elective - I (Open Electives – Urban Planning and Housing)

Subject code	Subject name
UP 531 / HU 531	Ecology and Resource Development
UP 532 / HU 532	Environmental Planning
UP 533 / HU 533	Planning for Disaster prone areas
UP 534 / HU 534	Energy Efficient Planning
UP 535 / HU 535	Landscape Planning
UP 536 / HU 536	Rural Planning and Development
UP 537 / HU 537	Urban Design

#### Elective – II

Subject code	Subject name
HU 541	Land-use and Transportation Planning
HU 542	Housing Design and Technology
HU 543	Materials and Technology
HU 544	Resettlement and Rehabilitation
HU 545	Infrastructure pricing and finance

# Detailed Syllabus

## First Semester (Integrated)

### CM 511: Introduction to planning

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.

Town planning in ancient India; Medieval, renaissance, industrial and post industrial cities; City as a living spatial entity; a physical, social, economic and political entity; Dynamics of the growing city, City as a political statement: Contribution of individuals to planning thought: Lewis Mumford, Patrick Geddes, Peter Hall, etc.; impact of industrialization and urbanization, metropolis and megalopolis.

Theories: Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory and other relevant theories; Land use and land value theory of William Alonso; Concepts: Garden City Concept; Emerging Planning Concepts: inclusive city, safe city, Green City, Shadow city, Sustainable City, Resilient City, Low Carbon City, Smart city etc., City of the future and future of the city .

Planning Models and Approaches: Advocacy and Pluralism in Planning; Systems approach to planning: rationalistic and incremental approaches, mixed scanning and middle range planning; Equity planning; Political Economy Model; Gravity Model, etc. Orthodoxies of planning; Goal formulation, objective, scope, limitations Sustainability and rationality in planning. Introduction to housing policies, housing need, demand and supply,

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

### Suggested readings

Regional planning for urban spaces  
Urban and Regional planning reader  
Housing: the essential foundation  
New urban housing

AD Walk  
Birch E, Glasson  
Paul and Balchin  
Hillery French

### CM 512: Urban Economics and Sociology Urban Economics

General introduction to principles of economics and public finance. Importance of economics in Urban Development and Planning.

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. National five-year plans ; appraisal and economic development in relation to regional and urban development.

Introduction to Public Finance . Project development cost. Economic principles of land use pattern and land values. Economic base of cities and regions and their inter-dependency, Industrial location policies, any other economic activity base policies and their impact on urban development, Role of land economics in preparation of Urban Development plans. Relevant case studies of Urban Land Economics.

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.

### **Urban 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.

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.

### **Suggested readings**

A brief introduction

Richard T Schaefer

Sociological principles

CN Shanker Rao

Modern Economic theory

HL Ahuja

Economics

Paul Sauruelson

### **CM 513 Planning Practices and legislation**

Concepts of law, Sources of law (i.e. custom, legislation and precedent) meaning of terms of law, legislation, ordinance, bill, act, regulations and bye laws. benefits of statutory backing for schemes .Indian constitution, concept and contents.

Concepts of arbitration, Betterment Levy, Development Charges and Public participation in statutory planning process, Provisions regarding property right, Legislative competence of State and Central Government to enact town-planning legislation.

Significance of land development control – objectives and legal tools, building regulations and byelaws. Development Code,

Professional fees as per ITPI , CPWD and other agencies

Evolution of planning legislation, An overview of legal tools connected with urban development, Town and Country Planning Act, Urban Planning and Development Authorities, Act --objectives, contents, procedures for preparation, approvals and

implementation of different plans. Introduction to law relating to slum clearance, housing, landscape and traffic. Legislation relating to urban conservation and restoration, historical monuments, archaeological sites etc.

National Rehabilitation and Resettlement Policy (2007) - Social Impact mitigation; National Environmental Policy (2006) – Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)

Land Acquisition Act 1994 – Basic concepts, procedures for compulsory acquisition of property and determination of compensation.

Urban Land (Ceiling and Regulation) Act 1976 – objectives, contents and planning implications. Real Estate Bill 2016 etc.

Relevant National and State Acts

Case study - implications of acts at various planning levels

### **Suggested readings**

Legislation and Planning practice  
ITPI Reader

Namavati

### **CM 514: Planning Techniques**

Types of Plans: master plan, development plan, structure plan, district plan , action area plan . Hierarchy of plans : Regional plan , sub-regional plan , sectoral plans and spatial plans .

Contents of base maps at various scales, notations – basic disciplines of maps: measurement of areas etc. Data requirement for urban and regional planning: sources of primary and secondary data, questionnaire design , measurement scale and their application , sampling techniques types of socio – economic surveys interviews , mailed questionnaires and observer participation.

Techniques of conducting surveys for land use , building use , density , structural condition of buildings , height of building , land utilization, physical features of land and information required for preparing various types of plans. Data requirement for various types of plans Tabulation of data, graphical presentation of data , techniques of graphical presentation of spatial data

Introduction to Remote Sensing – Aerial and Satellite, GIS , Spatial data and attributes Aerial photography as a tool for collection of data and preparation of maps, its application in planning and preparation for a project, orientation concept and methodology transformation and adjustment techniques. Basic principal and methods of photo interpretation and techniques of data collection through satellite data, Classification techniques using satellite data, Digital image processing, enhancement techniques in urban information extraction

Base map preparation and elementary data analysis using satellite data GIS techniques and their application in planning field.

### **Suggested readings**

Applied geology  
Concepts and techniques of GIS

Parbin singh and C Kesavilu,

### **CM 515 Quantitative Research Methods**

Measures of Central Tendency and Dispersion - Arithmetic Mean; Weighted Mean; Geometric and Harmonic Mean; Median and Mode; Variance and Standard Deviation

Time Series and Forecasting - Trend Analysis - Cyclical Variation, Seasonal Variation, Irregular Variation; Various Methods in Time Series Analysis – Moving Average, Ratio to Trend, Link Relative and Residual Factor Analysis - Principal Component Analysis

Probability Distribution and Sampling Distribution - Use of Expected Value in Decision Making; Binomial, Poisson and Normal Distribution (only application); Determination of Sample Size and Types of Sampling; Sampling Distribution (concept only); Design of Experiments (concept only)

Correlation and Regression - Two Variable versus Multiple Linear Regression; Simple and Multiple Correlation; Estimation of Parameters – The Method of Ordinary Least Squares; Hypothesis Testing, Goodness of Fit

Use of Excel Software for Analyzing Data; Applications of Features of Excel for statistical analysis; Introduction to other Statistical Analysis Software: e.g. SPSS

Network analysis: minimum path algorithm, Vogel's approximation method, link flows and inter zonal flows

Queuing methods, deterministic queuing model, probabilistics queuing model, single server FIFO system, multi server FIFO system

Simulation system concept, type of system, system modeling, nature and process of simulation, Monte Carlo simulation, computer application for simulation model, use of software for simulation process

#### **Suggested readings**

Quantity research book

CP Kothari

### **CM 516 Project formulation and Appraisal**

The concept of projects with focus on physical urban projects, Importance of project formulation, appraisal and management; life cycle of project,

Planning techniques; Bar charts, Networks; CPM and PERT, resource leveling and allocation, time-cost trade off aspects.

Project formulation: definition, objectives; Stages of project formulation and their significance; Methodology for project identification and formulation; Estimation, Costing, Project Cash-flow forecasting and analysis. Feasibility studies and DPRs. Risk and Uncertainty.

Project Appraisal: Financial, economic, social, environmental, technological appraisal criteria. Funding and appraising agencies;

Project execution and implementation: Contracts and other methods of execution, Stages of implementation, Project monitoring.

Project evaluation: meaning, objectives, scope, stages, approach and steps

#### **Suggested readings**

Project formulation

Prasanna Chandra

### **CM 517 Geo-Informatics**

Subject involves learning and application of basic techniques of GIS applications and remote sensing .

GIS Applications Coordinate system and geo-coding, vector data structure and algorithms, raster data structure and algorithms, data bases for GIS – concepts, error modeling and data uncertainty, decision making through GIS, constructing spatial data infrastructure and spatial information system; National Urban Information system.

Introduction to state of art gadgets and softwares .

GIS data processing ( Digitization , topology building and metadata creation ), Data structures and modeling , GIS Analysis ( Buffer , proximity and overlay ) , Decision making through GIS , Information systems ( Land Information system , Urban Information system for various activity sectors )

Handling of a planning project of atleast zonal level.

### **CM 518 Planning Studio-I**

Planning Studio aims to introduce theoretical and applied understanding of various aspects of Urban Planning.

Assignments / Exercises are for familiarisation of practical applications of norms and bye-laws . Understanding city and land-use character . Application of various techniques and theories at settlement level and developmental perspective of city planning.

A student is expected to understand the intricacies and interface between various variables of the site such as soil conditions, topography, environmental dimensions, location, spatial standards , leading to its application for a site planning exercise.

The area appreciation exercise is to enable the students to understand and contextualize of 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.

Appraisal and development of small and medium towns - to develop an approach/ framework for understanding the dynamics of various components of the city and how and what level interventions can be made .A group of students are expected to study a town in terms its present problems and issues and project a futuristic vision in terms of scenario building.



## Second Semester

### HU 521 Real Estate Planning

Introduction to real estate, definition, principles of real estate value concepts, methods of valuation, introduction to real property ownership, leasing property succession, methods of sale/ purchase, title search,

Investment and Laws Real estate investment analysis and portfolio management, foreign direct investment (FDI), role of NRIs and PIOs in the investment market, marketing and brokerage; Introduction to various laws related to real estate.

Real Estate Project Formulation Real estate project formulation, real estate development process, asset management, property insurance, real estate case studies, taxation and fiscal incentives, government policies and industry organization, public-private partnerships and JV'S, rating, risk assessment.

Housing Markets Concepts and definitions, housing market, area, the purpose and nature of housing market studies; factors affecting housing prices, housing market behavior, estimation of housing need, housing demand and identification of housing stress, factors affecting local housing market, housing demand and supply market process, housing search residential mobility and filtering causes and consequences, policy influence on housing market, the formal and informal housing markets and their impact on urban poor, public, Co-operative and private sector housing market, process and supply institutional frame work.

### UP 522 / HU 522 Infrastructure Planning

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.

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;

Solid Waste Disposal and Management, Basic principles, generation, characteristics, collection, disposal, management.

Fire and Electrification, and Social Infrastructure Planning for fire protection, services and space standards, location criteria; Planning for Education, health, civic, cultural infrastructure and facilities for transport and other miscellaneous infrastructure services.

Planning for Education, health, civic, cultural infrastructure and facilities for transport and other miscellaneous infrastructure services

### **HU 523 Housing Finance**

Financial environment at the national level, financial system and regulation, Characteristics of housing finance, policy for housing finance in national plans,

Sources of finance, public – private sector investment in housing, finance in urban and rural sector implications of long-term and short term financing, fiscal aspects of subsidizing public and private housing, housing finance requirements of economically weaker sections; Methods of financing, specialized finance institutions, mortgage financing systems, non-institutional financing, present trend in housing finance in India and in other countries, fiscal incentives in annual budgets, direct and indirect tax proposals.

Role of HUDCO, NHB, HFIs, various international donor/financing agencies, micro finance institutions, rural housing finance

Financial feasibility of projects, various financial instruments, concepts of IRR and NPV, basics of cash flow analysis, financial structuring of projects, preparation of DPR

### **HU 524 Planning and development of informal sector**

Emergence and growth of Informal Housing in third world cities and formal regulatory framework Diversity of housing needs of urban poor and informal housing options pavement dwelling, squatting, illegal land-subdivision, inner-city organic housing, and urban villages. Causes of growth and perpetuation and impacts of illegality.

Linkages of informal economy-supportive policies of settlement upgrading and options of tenure security. Impacts and obstacles to regularization. Integrated, participatory improvement approaches. Inclusive and equitable planning

Process of slum formation, causes and consequences, approaches to tackle the challenge of slums, relocation, rehabilitation, in-situ upgradation, etc.

Role of NGO's and CBO's in the improvement process; Dimensions of poverty and its manifestation in the housing sector, indicators, programmes specifically targeted towards slums and the urban poor, shelterless population.

### **Suggested readings**

Urban Informal sector in Asia

ILO publications

### **UP 531 – UP 537 / HU 531 – HU 537 Elective – I (Open Electives)**

#### **UP 531 / HU 531 Ecology and Resource Development**

Introduction to Ecology – Concepts and Theories, Major ecosystems of the Evolution of Ecology, Man and ecosphere. Components of nature and some basic concepts, process of ecology, flow of material, water, energy, invasion, succession, prediction, regulatory forces, adaptation, tropic levels, food chains, food web, ecological

pyramids, Urban Ecology -Evolution and Significance, Environmental impact assessment –Methods and appraisal.

Ecosystem and their relevance to environment, resource and human settlements. Modifications in natural environment, causes and consequences. Impact of advance agriculture –methods, urbanization and industrialization on nature.

Urban development and environment. Environmental Pollution, types, sources, remedies.

Urban ecosystem approach, evolution and significance. Introduction to qualitative ecology. Ecological approach of planning at different levels-Principles and procedures. Identification of ecological parameters for planning at different levels, site planning, settlement planning, regional planning. Data needs, formats for data collection. Types of analysis required to evolve ecological parameters. Limits to growth , Carrying capacity, suitability analysis

Ecological awareness in India, traditional indigenous methods, contemporary trends. Endangerments and resources, definition and classification according to different criteria and use, renewable and non-renewable etc.

Space bound and flow resources, preparation and analysis of resource inventories and resource matrices. Fitness of resources, examples of transfer from one resource to another in history in different parts of world. Development utilisation and conservation of resources, resource planning, integrated resource planning approach.

Resource regions, their problems and potentials. Resource management, traditional and contemporary approaches. Resource development in India, some selected areas (energy, water, manpower. etc.).Resource management in view of Climate change.

### **Suggested readings**

Ecology and Resource Management

Kenneth E. F. Watt

Urban Pattern

Arthur Gallion

The city los angelsand urban theory

Allenj scot

City shaped urban pattern meaning through history

Spirokostof

### **UP 532 / HU 532 Environmental Planning**

Introduction to Environmental planning, aims, objectives and Implementation. Introduction to State and National policies.

Environment planning theories and their applications, Issues related to Environment and ecology like, de - forestation, soil erosion, water logging and soil salinization. Scarcity of natural resources and exploitation of them for development, Planning for optimizing the use of natural resources, methods used like water harvesting, waste land management and minimizing use of fossil fuel etc.

Environmental aspects with respect to tribal and rural areas. Problems of air and water pollution, industrial pollution and solid waste management in urban areas.

Frame work, statement prediction and assessment of impacts of air, water, noise, cultural and socio-economic environment. Methods of impact analysis, public participation, Environmental impact assessment and statements.

Environmental protection international and national agencies and legislation, Environmental policies for various geographical regions. Environment Impact Assessment. Climate change and settlement planning

**Suggested readings**

NEPA and Environmental Planning: tools, Techniques and approaches Charles H Eccleston

**UP 533 / HU 533 Planning for Disaster prone areas**

Natural Disasters, Meaning, factors and significance. Characteristic, causes and effects of natural hazards viz. Drought, earthquake, flood and other hazards, Disaster profile of India- regional and seasonal

Disaster Preparedness and Response, Scope and objectives of disaster mitigation

Preparedness and response, Prerequisite for preparedness planning, action plans and procedure, models and checklists

Disaster response planning, roles and responsibilities of various agencies

Emergency operation support and management

Planning for Disaster Prone Areas, Planning requisites for disaster prone areas and preventive measures, Vulnerability analysis

Land use planning and regulations: Temporary settlements and communications

Development planning tasks at the pre-disaster and post- disaster stages .Disaster and housing, Shelter typology for different hazardous situations. Housing design and planning for pre and post disaster. Traditional methods of planning and construction Modification of unsafe housing and disaster resistant structures

Emergency Camps and Shelter, Emergency camps, Vulnerability and low cost dwellings. Temporary and emergency shelter design at post disaster stage, Shelter components, materials, structures and erection

Infrastructure and Management: Food, health care and infrastructure requirements

Movement, transport and communication, Emergency networks, communications and management, Settlement management policy for disaster prone areas, Training and education requirement.

Change pattern of climate and resilience

**Suggested readings**

Planning for Disaster William G. Ramroth

**UP 534 / HU 534 Energy Efficient Planning**

Energy and Human Settlements. Innovation in technology applications and energy use. Concepts and theory of design and operation of urban services and network systems water supply, sewage disposal, drainage refuse collection, recycling and disposal, electricity network, telephone network, health care and education, police protection and fire fighting, general welfare. Operational planning for emergency evacuation in urban areas.

Identification of energy system parameters for planning at different levels-site planning, settlement planning , regional planning, data needs, formats for data

collection. Types of analysis required to evolve them. Urban Energy system models and their applications.

National and state energy systems, environmental policies, acts.

The network and service systems- components , interrelationship requirements and need of appropriate technology. Effects of density, land use and urban structure on design of network and service systems.

Cost recovery, economics of urban service systems and networks.

### **Suggested readings**

Energy Efficient planning  
Energy Planning and Urban form

Efraimgil  
Susan E. Owens

### **UP 535 / HU 535 Landscape Planning**

The practice of landscape planning, the landscape planner and the various agencies, landscape design and planning procedures, implementation and professional liabilities.

Data analysis and inferences: Topography, geology, hydrology, vegetation, ecology, neighbourhood and culture visual, aesthetics.

Development controls, government planning, zoning, legal constraints, environmental impact assessment.

Landform, land drainage and equipments, decisive factors, landform planning and procedures, slope protections..

Urban water bodies, coastal works, planting concepts, reclamation of wastes, advance planning for wastes, reclamation of derelict/ waste water conservation, harvesting, forestry, urban forestry, historical sites and monuments.

### **Suggested readings**

Site planning  
Landscape planning

Kevin Lynch  
John O Simonds

### **UP 536 / HU 536 Rural Planning and Development**

Mutual dependence between urban and rural areas, between industries and agriculture, characteristics of symbiotic, development in India in this context.

Levels of living of rural people – trends and development, difference in level of development between various regions within India and different socio – economic groups.

National planning and rural development, concept of planning for rural settlements. Regional development and urban rural partnership, related input and infrastructure development, agriculture development, allied activities and pattern of rural linkage, communication and marketing facilities, community development, instructions and delivery of social services.

Rural settlement, typology, structure, spatial significance in metro regions and interior areas. Planning principles for village and community norms.

Rural reconstruction, basic need and rural sanitation, water supply, hygiene and drainage, technology transfer and options. Area, District and Block level development

planning and implementation, public participation in rural development process, role of voluntary organizations.

Rural energy issues, renewable and alternative resources of energy, ecological and environment considerations in rural development and village planning.

Models and theories of rural planning , policies and practices at global level, provisions in national and state five year plans and city master plans etc. Action programme initiated at national and global level. Housing agencies and co-operative feasibility and implementation of existing policies and action programme

Projections and forecasting

### **Suggested readings**

Rural planning and development

Thomas Adams

Micro level rural planning: principal, methods and case study

RP Mishra

### **UP 537 / HU 537 Urban Design**

Introduction to various philosophies , Concepts and Theories of Urban Design

Contribution of different philosophers to the field of Urban Design Need for urban design. Meaning, scope and purpose of Urban design. The relationship between Urban Design and Urban Planning. methodological approaches to spatial analysis of the city with an opportunity to analyze, explore and innovate new methods and techniques for understanding our cities. Determinants and components of urban form.

Morphological, Temporal , Social , Functional , Perceptual and Visual dimensions of urban design . Growth, scale and form of Indian cities

Principles of Urban design and criteria.

Urban massing and Scale (intimate, urban and monumental, human scale and generic scale) and Spaces (hierarchy and nature, effect of light, sense of enclosure). Introduction to analytical techniques in urban design.

Survey techniques in urban design (inventories and recording of findings, types of survey).Modern techniques and emerging approaches to urban design.

Road forms and townscape (serial and radial road forms, speed calming techniques, principles of streetscape, townscape and pedestrian design).

Principles of Urban Conservation ( legal, economic, organization and management issues).

Principles of Urban Renewal (purpose, economic and planning issues).

Urban design regulations and control, the comprehensive role of urban design in town planning process

### **Suggested readings**

Urban Design

Paul D. Spreiregen

### **HU 541 – HU 545 Elective – II**

#### **HU 541 Land use and transportation Planning**

Evaluation of urban structure: Transport system, infrastructure and management, transport systems and their types, design and operating characteristics, urban road

hierarchy, planning, and management criteria for road and junction improvements, arterial improvement techniques.

Transport survey and studies: study area definitions, survey and their types, sampling methods, survey techniques, programming and processing of travel data, analysis and interpretation of traffic studies.

Transportation Planning Process and analytical techniques: Techniques for urban structures analysis, Urban travel characteristics, urban transport interrelationship, transport planning process and modeling, scenario building and their analysis.

Traffic management, mass transit system: Problems and prospects, tramways, trolley buses, LRTS and MRTS operation characteristics. Review of existing traffic management schemes in Indian cities.

Transport and environment: Traffic noise, factor affecting noise statement measures, standards, air pollution standards, traffic safety, accident reporting and recording systems, factors affecting road safety, transport planning for different target groups. Norms and guidelines for highway landscape, street lighting types, standards and design considerations.

Economics evaluation: pricing and funding of transport services and systems, economic appraisal of highway and transport projects. Techniques for estimating direct and indirect road user costs and benefit value of time.

Intelligent transport system (ITS) and their types and applications

### **Suggested readings**

Introduction to transport planning

Michael J Bruton

Principal of Urban transport system planning

Hutchinson

Transport modeling

Ortuzer and Williamson

Traffic and Transportation planning and engineering

Khanna and Kadiyali

### **HU 542 Housing Design and Technology**

Building materials traditional and conventional, low cost materials, significance of technology for housing development, conventional technologies and modern technologies, appropriate technology, technology for housing in the context of housing development in India and the third world.

Concept of prefabrication, industrialization and system building, various open and closed systems, choice of various systems of building, concept of intelligent building; Organization of the construction industry in India-Significance of Housing construction industry, its characteristics and role of various factors involved; Small scale enterprises in the housing construction industry-building material manufacturers, sellers and small contractors. Significance of resources and manpower in housing construction, need for imparting in housing building, concept of NrimithiKendras.

Cost reducing techniques, environmental friendly technologies, role of technology in housing projects formulation-cost time and other implications, Emerging technological perspectives for house construction, infrastructure and housing area planning.

Role and significance of Physical infrastructure in housing development, characteristics of various components of physical planning and design of infrastructure, appropriate technology for infrastructure development, rain-water harvesting, use of

solar energy, wind energy and other appropriate technologies; Role of BMTPC and other organizations in promotion of new and alternative technologies.

### **HU 543 Material and Technology**

Introduction to Materials and Technology Building materials traditional and conventional, low cost materials, significance of technology for housing development, conventional technologies and modern technologies, appropriate technology, technology for housing in the context of housing development in India and the third world.

Prefabrication and Industrialization and Construction Industry Concept of prefabrication, industrialization and system building, various open and closed systems, choice of various systems of building, concept of intelligent building; Organization of the construction industry in India-Significance of Housing construction industry, its characteristics and role of various factors involved; Small scale enterprises in the housing construction industry-building material manufacturers, sellers and small contractors. Significance of resources and manpower in housing construction, need for imparting in housing building, concept of Nrimithi Kendras.

Cost Optimization Cost reducing techniques, environmental friendly technologies, role of technology in housing projects formulation-cost time and other implications, Emerging technological perspectives for house construction, infrastructure and housing area planning.

Alternative Technologies Role and significance of Physical infrastructure in housing development, characteristics of various components of physical planning and design of infrastructure, appropriate technology for infrastructure development, rain-water harvesting, use of solar energy, wind energy and other appropriate technologies; Role of BMTPC and other organizations in promotion of new and alternative technologies.

### **HU 544 Resettlement and Rehabilitation**

Land Development and Resultant Resettlement Land Acquisition Models and Practices in India and elsewhere for projects. Compulsory Acquisition, land sharing and adjustment models, land pooling, negotiated land acquisition. Development induced relocation – voluntary and involuntary resettlement; Resettlement and Rehabilitation Policies. Policies of multi-lateral / bilateral funding institutions: World Bank, Asian Development Bank Policies, National Policy on Resettlement and Rehabilitation and State Policies on R and R and Sector Specific Policies in large projects such as Multi-Purpose Dam Projects, Mining projects, Highway projects, SEZ, etc.

Impact of Resettlement and Rehabilitation (R and R) Plan Poverty and Social Impact Assessment for Development projects: Linear Projects (Roads, railways, etc), vis-à-vis non-linear projects (Township / industrial area development, dams, forests).

Impact on vulnerable and indigenous groups: Project Affected People and Project Affected Assets, Impact on Women and Children, Gender Action Plans. Resettlement Plan: Context, content, structure, principles and practices: Economic, social and physical implications of resettlement and rehabilitation. Resettlement options and strategies, Self-relocation and project facilitated relocation; Case studies in Resettlement and Rehabilitation in Development Sectors: Mining, Highways, Power,



industrial and township development. Flood affected areas and other infrastructure projects such as Mumbai Transport Project.

Rehabilitation Policies, Assessing the livelihood losses, livelihood impact assessment and skill mapping surveys, income restoration strategies, training strategy for skill up gradation and meeting demands for shifting economic profiles in the development area.

Participation as an Important Tool for Resettlement and Rehabilitation Use of Participatory tools for Resettlement Planning. Institutional arrangements for R and R – Role of NGOs / CBOs and other local, state, national and international organizations in resettlement and rehabilitation, Monitoring and Evaluation of R and R interventions.

### **HU 545 Infrastructure Pricing and Financing**

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.

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.

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.

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

### **HU 525 Planning Studio – II**

The studio intend to evolve comprehensive housing development strategy for the selected city by studying city level and housing subsystem level aspects and estimating housing shortage; projecting housing need and demand and preparing alternative scenarios for housing development. The study need to be carried out mainly thorough secondary sources.

A comprehensive large scale housing proposal to be developed for selected city based on socio-economic and demographic characteristics. Emphasis on project conceptualisation, feasibility report, physical planning proposal, details of services and project management schedules be worked out.

## Third Semester

### **HU 611 Project Phase – I**

The intention of this subject is to develop the research aptitude and skill of report writing. Selection of the topic has to be done as per department's policy. The work shall be done on the selected topic related to the field of Urban Planning. Submission till the stage of literature review findings and case study with inferences and conclusions has to be done

02 Seminar papers, broadly on the basis of thesis topic, are to be prepared and presented.

### **HU 612 Training**

Professional internship of 6 Weeks to be taken up in the semester break after second semester – office / agency finalized by the department.

Submission in the form of the report and presentation is to be done. Intermediate submissions as directed.

## Fourth Semester

### **HU 621: Project Phase – II**

Each student is required to prepare a thesis on a subject concerning Housing or Urban Planning (major objective of housing) as approved by the Department of Architecture and Planning.

The objective of a thesis is to provide an opportunity to each student to undertake in depth and original study and research in the field of his/her interest. The thesis also provides an opportunity to synthesize the knowledge and skills, acquired through the learning of various theories and practices during the previous semesters.

The subject of thesis may be conceptual, historical, analytical, and comparative or in any other area related to urban development and planning which shall be approved by the department. Thesis has to primarily have a physical plan proposal / application.

Each candidate will prepare the thesis in consultation with a guide as allotted by the department.