ANNA UNIVERSITY, CHENNAI
UNIVERSITY DEPARTMENTS
DEPARTMENT OF PLANNING
REGULATION 2023
M.PLAN. (TRANSPORTATION PLANNING) - FULL TIME
I TO IV SEMESTERS CURRICULA AND I SEMESTER SYLLABI

Semester I

S. No.	Course Code	Course Title	Category	Periods per week			Total Contact Periods	Credits
				L	T	P		
1.	TP3101	Introduction to Planning	PCC	3	0	0	3	3
2.	TP3102	Planning History and Theory	PCC	3	0	0	3	3
3.	TP3103	Socio-Economic and Political Dimensions in Planning	PCC	3	0	0	3	3
4.	TR3101	Housing and Infrastructure Planning	PCC	3	0	0	3	3
5.	TP3111	Planning Techniques	EEC	1	0	4	5	3
6.	TP3112	GIS Modeling in Urban and Regional Planning	EEC	1	0	4	5	3
7.	TP3121	Area Planning Studio	EEC	0	0	10	10	5
						Total	**32**	**23**

Semester II
(Prerequisite- Pass in Area Planning Studio)

S. No.	Course Code	Course Title	Category	Periods per week			Total Contact Periods	Credits
				L	T	P		
1.		Traffic and Transportation Engineering	PCC	3	0	0	3	3
2.		Public Transport Planning	PCC	3	0	0	3	3
3.		Urban Transportation Planning	PCC	3	0	0	3	3
4.		Transport Economics	PCC	3	0	0	3	3
5.		Professional Elective I	PEC	3	0	0	3	3
6.		Macro Simulation in Transportation Planning	EEC	1	0	4	5	3
7.		Planning Studio I - Comprehensive Mobility Plan	EEC	0	0	10	10	5
						Total	**30**	**23**

Semester III
(Prerequisite - Pass in Planning Studio I - Comprehensive Mobility Plan)

S. No.	Course Code	Course Title	Category	Periods per week			Total Contact Periods	Credits
				L	T	P		
1.		Design of Transport Infrastructure	PCC	3	0	0	3	3
2.		Urban and Regional Freight Transport	PCC	3	0	0	3	3
3.		Professional Elective II	PEC	3	0	0	3	3
4.		Micro Simulation in Transportation Planning	EEC	1	0	4	5	3
5.		Planning Studio II – Transport Infrastructure Plan	EEC	0	0	10	10	5
6.		Thesis Phase – I	EEC	0	0	10	10	5
7.		Internship Training	EEC	-	-	-	-	3
						Total	**34**	**25**

**Internship Training of 6 weeks full time during the vacation in an Organization, which is engaged in Transportation Planning activities and approved by the Department

Semester IV
(Prerequisite - Pass in Planning Studio II – Transport Infrastructure Plan & Thesis Phase - I)

S. No.	Course Code	Course Title	Category	Periods per week			Total Contact Periods	Credits
				L	T	P		
1.		Transport Policy, Legislation and Governance	PCC	3	0	0	3	3
2.		Project Formulation and Appraisal	PCC	3	0	0	3	3
3.		Thesis Phase – II	EEC	0	0	22	22	11
4.		Industry Oriented Course	IOC	1	0	0	1	1
						Total	**29**	**18**

Industry Oriented Course : 15 hours of theory/practical/theory cum practical, course content to be proposed by HoD one semester earlier with DCC approval

Total No. of Credits: 89

Professional Elective Courses (PEC)

S. No.	Course Code	Course Title	Category	Periods / Week			Total Contact Periods
				L	T	P	
1		Road Safety and Environment	PEC	3	0	0	3
2		Multimodal Integration Transportation	PEC	3	0	0	3
3		Street Design and Management	PEC	3	0	0	3
4		Port Planning and Management	PEC	3	0	0	3
5		Smart Mobility	PEC	3	0	0	3
6		Transport and Environmental Justice	PEC	3	0	0	3

*Credits for 2 Professional Electives to be chosen

TP3101	INTRODUCTION TO PLANNING	L	T	P/S	C
		3	0	0	3

COURSE OBJECTIVE

- Understand the foundational concepts of planning as a multidisciplinary discipline and the role of planners across urban, regional, and environmental domains.
- Understand the hierarchy, types, and scopes of various planning instruments at different spatial scales, including national to local-level plans.
- Understand key planning principles, theories, and evolving paradigms that guide rational decision-making in urban and regional contexts.
- Understand the planning system in India, including institutional frameworks, plan formulation processes, and implementation challenges.
- Understand emerging and futuristic planning models and mechanisms like land value capture, land pooling, and strategic planning approaches.

UNIT I PLANNING AS A DISCIPLINE 9

Introduction to planning discipline - Defining planning as a discipline, it's multidisciplinary nature, role of a planner - Definitions and basis of planning – urban and rural settlement – classification of towns – Urbanization trend - Fields of planning - Urban, regional, environmental, transport and infrastructure – role of development authorities - goals and objectives of planning.

UNIT II HIERARCHY OF PLANS 9

Need for Hierarchy of plans – Types and Scope of various scales of plans –Perspective Plan, Regional Plan – Block Development Plan - Structural Plan, Master Plan, Detailed Development Plan/Zonal Plan/Town Planning Schemes – Local Area Plan - Layouts – Significance of plans – Case studies.

UNIT III PLANNING PRINCIPLES 9

Principles in planning - Rationality in planning, - Blueprint and process mode - Disjointed incremental mode of planning - Normative versus functional mode of planning - Pragmatism in planning; Regime theory and urban politics – Synoptic Planning – Advocacy Planning – Radical Planning – Transactive Planning – Trade Off – Optimization Technique - Current Planning Practice in India and the way forward.

UNIT IV PLANNING PROCESS AND SYSTEM 9

Planning system in India - Institutional mechanism, Plan making process – Delineation of planning area, Assessment of developmental issues, Plan period, Formulation of aim and objectives, Projection of requirements, Development proposals and phasing - Public Participation - Constraints in plan preparation and implementation - Legal, Financial, Human resource and Institutional - Planning Process in the formulation and implementation of Urban and Regional Plans.

UNIT V FUTURISTIC PLANNING 9

Recent and contemporary contributions to the changing planning paradigms; Planning for future and in future - vision development, strategizing, Implementation – Land Value Capture techniques - Land Pooling concept, Transfer of Development Right, Accommodation Reservation - Swiss Challenge Model, etc.

TOTAL : 45 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Understand the multidisciplinary scope of planning and the evolving role of planners in urban, regional, and infrastructure development.

CO2 Understand the hierarchy of spatial plans and their significance across various planning scales and contexts.

CO3 Analyze classical and contemporary planning principles and theoretical models used in urban and regional planning.

CO4 Apply knowledge of the planning process and institutional mechanisms involved in the formulation and implementation of spatial plans.

CO5 Evaluate the challenges and constraints in plan preparation and implementation, including legal, financial, and institutional factors.

CO6 Apply futuristic planning strategies such as Land Pooling, Transferable Development Rights (TDR), and Swiss Challenge Model to emerging urban planning scenarios.

Text Books

1. Hiraskar G.K (2012), “Fundamentals of Town Planning”, Dhanpat Rai Publications.
2. John Ratclliffe (1985), “An Introduction to Town and Country Planning”, Hutchinson.
3. Anthony James Catanese and James Synder C (1988), “Introduction to Urban Planning”, McGraw-Hill, Inc,US.
4. Davidoff.P,(1965): Advocacy and Pluralism in Planning, Journal of American Institute of Planners, Vol. 31. USA.
5. Amiya Kumar Das (2007), “Urban Planning in India”, Rawat Pubns.

References

1. Government of India (2015), “Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organization, Ministry of Urban Development, New Delhi.
2. Palermo, Pier Carlo (2010), “Spatial Planning and Urban Development: Critical Perspective”, Springer.
3. Kamal Uddin and Bhuiyan Monwar Alam (2023), “Public Participation Process in Urban Planning: Evaluation Approaches of Fairness and Effectiveness Criteria of Planning Advisory Committees”, Routledge.

4. Biswas Hiranmay (2012), “Principles of Town Planning and Architecture”, VAYU Education of India.
5. Peter Hall and Mark Tewdwr-Jones (2019), “Urban and Regional Planning”, Routledge; 6th edition.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	2	3	1	3
CO2	3	3	3	2	3	2
CO3	3	1	2	-	3	-
CO4	2	-	2	3	2	2
CO5	3	1	-	-	3	1
CO6	3	-	1	-	-	2
Average	3	2	2	3	2	2

H-High M-Moderate L-Low

TP3102	PLANNING HISTROY AND THEORY	L	T	P/S	C
		3	0	0	3

COURSE OBJECTIVE

- Understand the historical evolution of cities and their planning significance across time periods.
- Understand the transformation of urban forms in South Asia and globally through different historical phases.
- Understand the foundational and advanced theories of urban structure and their implications in spatial organization.
- Understand how theoretical frameworks serve as tools for understanding and guiding urban development.
- Understand the emergence of modern urban planning concepts and critically evaluate their relevance in contemporary urban practice.

UNIT I EVOLUTION OF URBAN PLANNING 9

The significance of the study of historical processes - Interpreting history for planning purposes - overview of civilization - Concept of time as a dimension of built form – Criteria of location and development of towns in history – process of city transformation - Cities in effects of Industrial Revolution – growth and legacy of Imperial cities - Significance of rise and fall of great cities.

UNIT II TRANSFORMATION OF URBAN FORMS 9

Evolution of cities in South Asia - Cities from Ancient – Medival Towns – Great cities of Mughal Empire – Colonial Cities - dominance of modernism - Planned cities post-modernism - Examine the major cities from the ancient world to the present day – Urban reform – Case Studies.

UNIT III THEORIES OF URBAN STRUCTURE 9

Overview of planning theory – Types – Importance – Shifts in theory with time and context - Theories of urban structure including – The Theory of the City – Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory, Theories of Ekistics, CA Perry's: Neighborhood Unit and other latest theories.

UNIT IV THEORIES: AS A TOOL OF URBAN DEVELOPMENT 9

City as an organism: A physical entity, social entity, economic entity and political entity – Garden City Movement - Geddisian Triad – Conurbation – Tony Garnier's: Industrial City – Factory Town – La-Ville Contemporaries – Radburn City – Broadacre city – Arcology – Lewis Mumford's views on new social order - Theory of William Alonso on location – Public Choice Theory – Urban Imageability – Serial Vision – Eyes on the Street - Proxemics Theory – Defensible Space and other latest theories.

UNIT V EMERGING PLANNING CONCEPTS 9

Concept, advantages and limitations on planning practices - Paradigms of planning practice by John Muller, Kuhn and others - various issues in practices – smart cities – eco-cities – sustainable cities – livable cities – other concepts - Critical appraisal of City and Metropolitan Planning in India through Case Studies - Uncertainty in Planning.

TOTAL : 45 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Understand the historical processes and their significance in shaping the evolution of cities and urban planning practices.

CO2 Understand the transformation of urban forms across ancient, medieval, colonial, and post-modern periods, with a focus on South Asian contexts.

CO3 Analyze classical and contemporary theories of urban structure and spatial organization, such as the Concentric Zone Theory, Sector Theory, and Ekistics.

CO4 Apply theoretical models such as Garden City, Broadacre City, and Arcology to interpret different urban development patterns.

CO5 Evaluate the effectiveness of planning theories and urban concepts in addressing urban issues in India, through critical case study analysis.

CO6 Apply emerging planning paradigms like smart cities and sustainable urbanism to understand shifts in modern urban planning approaches.

Text Books

1. Campbell, Scott and Fainstein, S.Susan (1996), “Readings in Planning Theory”, Blackwell Publishing, London.
2. Faludi.A (1973), “Planning Theory”, Pregamon Press, Oxford.
3. Lewis Mumford (1968), “The City in History: Its Origins, its transformations and its prospects”, Harcourt Brace International.
4. Binode Behari Dutt (2009), “Town Planning in Ancient India”, Thacker Spink and CO., Calcutta.
5. John Julius Norwich (2014), “Cities That Shaped the Ancient World”, Thames & Hudson.

References

1. Galloway.D.T Riad, G.M (1977), “Planning Therory in Retrospect: The process of Paradigm Change”, Journal of American Planning Association.
2. Robert A.Beauregard (2020), “Advanced Introduction to Planning Theory”, Edward Elgar Publication.
3. A.E.J.Morris (1994), “History of Urban Form Before the Industrial Revolution”, Longman Publication.
4. Peter Clark (2013), “The Oxford Handbook of Cities in World History”, Oxford University Press.
5. Jin, Wu (1993), “The historical development of Chinese urban morphology.” Planning Perspectives.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	1	2	3	2
CO2	3	3	2	1	2	3
CO3	3	1	3	-	3	-
CO4	3	-	2	-	3	2
CO5	2	3	3	2	3	-
CO6	3	3	2	-	1	3
Average	3	2	2	2	3	3

H-High M-Moderate L-Low

TP3103	SOCIO-ECONOMIC AND POLITICAL DIMENSIONS IN PLANNING	L	T	P/S	C
		3	0	0	3

COURSE OBJECTIVE

- Understand the socio-spatial concepts and structures shaping urban and rural settlements.
- Understand the economic base of cities and regions and its influence on spatial development.
- Understand the fundamental economic principles of demand, supply, and their application in planning.
- Understand the implications of competition, market behavior, and externalities on urban services and facility distribution.
- Understand the interlinkages between politics, governance, and urban planning processes.

UNIT I SOCIO-SPATIAL ASPECTS 9

Sociological concepts and social groups - Socio-spatial structures and Institutions related to urban and rural communities - Human and urban geography of urban areas – Human interaction and spatial form of cites – urban structure and urbanization – city sprawl – Sub-urbanism and Gentrification, Rural - Urban continuum - Social and economic Impacts of urban growth and expansion - Case Studies.

UNIT II ECONOMIC BASE 9

Economic concepts and frameworks - Macro and micro economics - Agglomeration economics - Economics of scale - Multiplier effect-concepts and scope - Economic base of cities and region - Understanding economic base and changing spatial structure of urban areas - Consumer Choice Theory- Production and Costs- Theory of Production- factors of production, cost scale of production- economics of scale- consumption – theories of consumption – Spatial Case Examples.

UNIT III THEORY OF DEMAND AND SUPPLY 9

Definition of need, Demand and supply- Law of demand and supply- Theory of demand and utility- elasticity of demand and supply – its use in Planning- Application of demand and supply in relation to housing and infrastructure services- perfect and imperfect market type – market demand and supply- pricing under different market conditions and the market mechanism, Application of theory in provision of urban services.

UNIT IV FORMS OF COMPETITION 9

Performance of Competitive Markets- Efficiency, Equity and Welfare Economics- Imperfect Competition – Social stratification – race, class and culture, etc. - Introduction to Game Theory - Resource allocation and optimization – public facility and Location choice – Pollution, Crime and Externalities – Property tax – Transportation pricing, Rationale for pricing, Spatial Case Examples.

UNIT V URBAN POLITICS 9

Classical and modern notions of politics; Links between politics and planning; Implication of politics on governance and plan making process – case studies.

TOTAL : 45 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Understand socio-spatial structures, urbanization patterns, and the social impacts of urban growth across rural and urban contexts.

CO2 Understand economic concepts such as agglomeration, scale, production, and consumption, and their relevance to urban spatial structure.

CO3 Analyze the principles of demand, supply, elasticity, and market mechanisms, and apply them to urban infrastructure and housing provision.

CO4 Apply concepts of competition, optimization, pricing, and externalities in evaluating urban systems such as public facilities and transportation.

CO5 Evaluate the performance of urban markets and public policies using welfare economics, equity, and efficiency perspectives.

CO6 Apply understanding of political structures and governance to interpret planning processes and their impact on urban policy.

Text Books

1. Antony Giddens and Philip W Sutton (2010), “Sociology-Introductory Readings”, Polity, Oxford.
2. Wilson R.A. & Schulz D.A. (1978), ‘Urban Sociology’, Prentice Hall Inc., New Jersey.
3. Robert H.Frank (2016), “Principles of Micro Economics”, Sixth Edition: McGraw: Hill Education.
4. Arthur O’ Sullivan (2012), “Urban Economics”, McGraw – Hill/Irwin, New York, 8th edition.
5. Gans, Herbert (1994), “Urbanism and Sub-urbanism as Ways of Life: A Re-evaluation of Definitions.” In People, Plans, and Policies.

References

1. Bhatt Caste (1975), “Class and Politics”, Manohar Book Service, Delhi.
2. Jackson, K,Crabgrass Frontier (1985), “The Suburbanization of the United States.’ Oxford University Press.
3. McCann, Philip (2001), ‘Urban and Regional Economics’, Oxford University Press.
4. Paul N. Balchin, Gregory H.Bull, Jeffrey L. Kieve (1995), ‘Urban Land Economics and Public Policy’, Macmillan International Higher Education.
5. Strange, William C (2008), ‘Urban Agglomeration’, The New Palgrave Dictionary of Economics ,2nd edition.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	3	1	3	1	3
CO2	3	3	2	2	2	3
CO3	2	3	2	1	1	2
CO4	3	2	1	-	-	3
CO5	2	1	1	1	2	3
CO6	3	3	2	-	3	3
Average	3	3	2	2	2	2

H-High M-Moderate L-Low

TR3101 HOUSING AND INFRASTRUCTURE PLANNING

L	T	P/S	C
3	0	0	3

COURSE OBJECTIVE

- Understand the significance of housing development in the context of national and global urbanization trends.
- Analyze the impacts of industrialization and urbanization on housing and the built environment.
- Explore housing policies, public interventions, and institutional frameworks governing housing in India.
- Learn the planning, design, and management of water supply, sewerage, solid waste, and storm water systems in housing developments.
- Promote sustainable, eco-friendly, and inclusive housing practices through integrated infrastructure planning.

UNIT I SIGNIFICANCE AND NEED OF HOUSING DEVELOPMENT 9

Urbanization trend in global and national level, Significance of Housing; Classification of Housing Typology; housing in different climatic region, housing Situation in India; Housing Need and Demand Assessment and Its Forecasting.

UNIT II URBANISATION AND HOUSING 9

Impact of industrialization and urbanization on housing and built environment, Housing design, standards, layout preparation, sanction and approval and concerned agencies, green house and eco-friendly housing, Socio-economic and spatial aspects of housing, Planning norms and standards, Homelessness and Indian Society.

UNIT III POLICY AND PUBLIC INTERVENTION IN HOUSING 9

National and State Housing Policy; Changes in Approaches to Housing Interventions; Legal and Institutional Framework for Housing in India; Housing Strategy for a City - Housing Action Plan for a City, National Urban Rental Housing Policy.

UNIT IV WATER SUPPLY AND SWERAGE 9

Water demand and supply estimation for urban and rural housing; Sources of water – surface and groundwater; Treatment and distribution systems; Planning and design of water supply systems in housing developments; Sanitation and sewerage systems – types, collection, treatment and disposal; Wastewater reuse and recycling; Institutional framework and service delivery mechanisms; Issues of equity, accessibility, and sustainability; Case studies of urban and peri-urban water and sanitation management.

UNIT V SOLID WASTE AND STORM WATER 9

Types and sources of solid waste; Estimation, collection, transportation, treatment, and disposal methods; Waste segregation and recycling strategies; Role of community participation and informal sector in solid waste management; Storm water – causes and impacts of urban flooding; Storm water drainage systems – design and maintenance; Integration of solid waste and storm water management with housing planning; Smart and sustainable practices; Relevant regulatory frameworks and case studies.

TOTAL : 45 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Describe the trends in urbanization at global and national levels and explain the significance and classification of housing typologies in different climatic regions.

CO2 Explain the impact of industrialization and urbanization on housing development, design standards, and socio-economic aspects of housing.

CO3 Discuss the evolution of housing policies in India, the role of legal and institutional frameworks, and the formulation of housing strategies and action plans.

CO4 Outline the principles of planning, design, and management of water supply and sewerage systems in housing developments.

CO5 Explain the processes and challenges involved in the management of solid waste and storm water in urban housing contexts, emphasizing environmental sustainability and regulatory compliance.

CO6 Analyze the interrelationship between housing development and essential infrastructure components, and assess regulatory frameworks relevant to housing planning.

Text Books

1. Bridget Franklin (2006), “Housing Transformations Shaping the Space of Twenty-First Century Living”, Routledge Publishers, UK.
2. V. Gandotra, M. Shukul, N. Jaju and N. Jaiswal (2009), “Housing : Changing Needs and New Directions”, , Authors press.

3. Cedric Pugh (1990), “Housing and Urbanisation- A study of India”, Sage Publications, New Delhi.
4. Durand Lasserve, Royston L (2002), “Holding Their Ground: Secure Land Tenure for the Urban Poor in Developing Countries”, Earthscan Publication, UK.
5. Dr. Adv. Harshul Savla (2021), Affordable Housing : Roof for Every Indian, Notion Press; 1st edition.

References

1. Gerard Van Bortel, Vincent Gruis (2018), “Affordable Housing Governance and Finance: Innovations, partnerships and comparative perspectives”, Routledge; 1st edition.
2. Sasha Tsenkova (2021), Cities and Affordable Housing: Planning, Design and Policy Nexus, Taylor & Francis Ltd; 1st edition.
3. Padmini Ram , Malcolm Harper (2020), “The Affordable Housing Market In India: Institutional Constraints, Informal Sector And Privatisation”, Routledge.
4. Swetha Rao Dhananka (2020), “Housing and Politics in Urban India: Opportunities and Contention”, Cambridge University Press.
5. Dr. Rajashree J. Jawale (2023), “Right to Housing in India”, Notion Press.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	1	-	2	-
CO2	3	2	2	-	2	-
CO3	3	2	2	-	2	1
CO4	2	2	3	1	3	1
CO5	2	2	2	-	3	1
CO6	3	3	3	-	2	2
Average	3	2	2	1	2	1

H-High M-Moderate L-Low

TP3111	PLANNING TECHNIQUES	L	T	P/S	C
		1	0	4	3

COURSE OBJECTIVE

- Understand the basic principles and techniques of data collection, classification, sampling, and statistical summarization.
- Understand the concepts of probability, hypothesis testing, correlation, regression, and their significance in data interpretation.
- Understand demographic analysis techniques and population forecasting methods relevant to planning.

- Understand the application of analytical techniques and models for decision-making in spatial and regional planning.
- Understand the role of data visualization and mapping in communicating planning information effectively.

UNIT I INTRODUCTION TO STATISTICAL METHODS 10

Methods of Data Collection - Classification and Tabulation of Data – Qualitative and Quantitative data- content analysis and meta-analysis - grounded theory - Measures of Central Tendencies and Dispersion – Questionnaire Design – Types of Sampling – Sampling Size – Sampling and Non sampling Error- field study in data collection and analysis - introduction to software.

UNIT II STATISTICAL INFERENCE 20

Elementary Probability – Concepts and Definitions – Probability Distributions – Sampling Distribution – Theory of Estimation and Testing of Hypothesis – Tests for Means and Proportion – NonParametric Tests – Correlation and Regression Analysis, Time series analysis– hands on training in application of software.

UNIT III DEMOGRAPHIC ANALYSIS 10

Distribution and Structure of Population – Demographic characteristics of Population and their Measures – Methods of Population Projection – Migration Analysis – Description and Construction of Life Tables.

UNIT IV APPLICATION PLANNING TECHNIQUES & TOOLS 10

Analytical methods - linear programming, threshold analysis, simulation, rank size rule, scalogram, sociogram, cluster and factor analysis, delineation techniques, SWOT analysis; demographic analysis; location models, gravity models, Delphi, Trade Off Game, Simulation Model.

UNIT V DATA VISUALIZATION IN PLANNING 25

Introduction To Mapping And Data Visualization Spatial And Non-Spatial Data - Introduction To Functional Visualization of Various Attributes of Buildings- Data Visualization Platforms USING Software.

TOTAL : 75 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Understand the methods of data collection, classification, sampling, and use of statistical tools in planning analysis.

CO2 Understand statistical inference, probability distributions, hypothesis testing, and regression for interpreting spatial and non-spatial datasets.

CO3 Analyze demographic trends and construct population projections using life tables and migration models.

CO4 Apply statistical and analytical planning tools such as linear programming, cluster analysis, and location models to real-world planning problems.

CO5 Evaluate the appropriateness of various quantitative techniques in addressing planning issues through case-based application.

CO6 Create visual representations of planning data using statistical software and data visualization platforms for effective spatial communication.

Text Books

1. Agarwal B, L (2007), “Programmed Statistics”, New Age International Publishers, New Delhi.
2. Denzin, Norman K.and Yvonna S. Lincoln (2011), “Sage Handbook of Qualitative Research”, 4th edition.
3. Booth W., Colomb G.G., Williams J. M., J. Bizup, and Fitzgerald W.T. (2016), “The Craft of Research”. Chicago: University of Chicago Press.
4. Gaber J, (2020), “Qualitative Analysis for Planning and Policy: Beyond the Numbers”, New York: Routledge.
5. Fowler F (2013), “Survey Research Methods”, Thousand Oaks, CA: Sage.

References

1. Allen, R, and C. S. Slotterback (2017), “Building immigrant engagement practice in urban planning: the case of Somali refugees in the Twin Cities”, Journal of Urban Affairs.
2. Hsieh, H.F., S. Shannon (2005), “Three approaches to qualitative content analysis”, Qualitative Health Research 15, 9: 1277-88.
3. Skodval, M. and Cornish, F (2015), “Qualitative Research for Development: A Guide for Practitioners”, Rugby, UK: Practical Action Publishing.
4. Leech B.L (2002), “Asking questions: techniques for semi-structured interviews”, Political Science and Politics 35, 4: pages 665-668.
5. Bryman and E. Bell (2011), “Interviewing in qualitative research”, Business Research Methods, Oxford: Oxford University Press.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3	3	3	2
CO2	3	3	3	3	2	2
CO3	3	3	3	3	2	1
CO4	3	3	3	3	2	2
CO5	3	3	3	3	2	2
CO6	3	1	1	1	-	1
Average	3	3	3	3	2	2

H-High M-Moderate L-Low

TP3112	GIS MODELING IN URBAN AND REGIONAL PLANNING	L	T	P/S	C
		1	0	4	3

COURSE OBJECTIVE

- Understand the concepts of spatial and non-spatial data, mapping standards, georeferencing systems, and remote sensing tools used in physical planning.
- Understand the GIS data models, data input techniques, and data conversion processes used for spatial analysis and planning.
- Understand the analytical processes for vector and raster data and their relevance to land use and cadastral planning.
- Understand the methods of spatial analysis and mobile-based GIS for field data collection and real-time planning applications.
- Understand urban land use modeling techniques and the integration of open-source GIS/web portals in planning practice.

UNIT I SPATIAL AND NON-SPATIAL 15

Classification of spatial and non-spatial data, Ellipsoid and Geoid, Projection and Coordinate systems, Preparation of map – Purpose of the map, Topographic sheets, Topic, Format, Scale, Audience, Production and Reproduction of map, Data base concepts – Primary key, Foreign Key, ER diagram, Passive and Active Remote Sensing, Image Processing – Spectral Signature Curve, GPS, Aerial Photograph, Satellite Imagery, LIDAR and Drones in Physical Planning, Commercial and open-source GIS packages.

UNIT II DATA INPUT 15

Defining the objectives of GIS planning problems, Identification of required spatial data layers, GIS Data Models and Data Input, Attributes and Levels of Measurement, Data Sources, Ground and Remote Sensing survey, Map scanning Registration, Geo referencing and digitization, , Adding attribute data file – Topology generation – Joining attribute data to its geographic features Concepts of RDBMS, Raster Data Model, Data Encoding, Data Compression, Vector Data Model, Raster Vs. Vector Comparison, File Formats for Raster and Vector, Data conversion between Raster and vector.

UNIT III RASTER AND VECTOR DATA ANALYSIS 15

Vector Data Analysis: Topological Analysis, point-in-polygon, Line-in-polygon, Polygon-in-Polygon, Proximity Analysis: buffering, Thiessen Polygon, Raster Data analysis: Local, Neighborhood and Regional Operations, Non-topological analysis Attribute data Analysis- concepts of SQL– ODBC, cadastral digitization, land use plan preparation.

UNIT IV SPATIAL ANALYSIS USING GIS 15

Introduction and necessity of Analysis and geoprocessing, spatial analysis , buffering, hotspot analysis, Image Analysis, 3D Analysis, Map and report generation, Mobile GIS, Field survey using Mobile application.

UNIT V URBAN LAND USE MODELING AND WEB APPILCATION 15

Introduction to 3D Modeling, need for model, Urban land use modeling, Transitional potential modeling and land allocation modeling, Introduction to Bhuvan and TNGIS, usage of online portal for analysis, open-source map layers for analysis.

TOTAL : 75 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Understand spatial and non-spatial data types, coordinate systems, image processing, and the use of GIS tools in physical planning.

CO2 Understand GIS data models, spatial data input methods, georeferencing, and raster-vector data conversions for map creation.

CO3 Analyze raster and vector datasets using spatial queries, proximity tools, and topological operations for urban planning outputs.

CO4 Apply spatial analysis techniques using GIS and mobile data collection tools for real-time urban data visualization.

CO5 Evaluate the suitability and performance of GIS-based spatial analysis tools and models for different urban planning contexts.

CO6 Create urban land use models and web-based GIS applications using open-source platforms like Bhuvan and TNGIS for spatial planning and decision support.

Text Books

1. Michael Demers (2008), “Fundamentals of Geographic Information Systems”, John Wiley & Sons Inc; 4th edition.
2. Anji Reddy.M.(2012), “Text book of Remote Sensing and Geographical Information Systems”, B.S. Publications, Hyderabad.
3. Michael Law and Amy Collins (2022), “Getting to Know ArcGIS Desktop”, ESRI Press, USA.
4. MD Kennedy (2013), ‘Introducing Geographic Information Systems with ArcGIS - A Workbook Approach to Learning GIS’, John Wiley & Sons Inc; 3rd edition.
5. Paul Longley and Michael Betty (1996), Spatial Analysis – Modeling in GIS Environment, John Wiley.

References

1. Michele Campagna (2005),“GIS for Sustainable Development”, Taylor and Francis.
2. Pinde Fu (2020) ,“Getting to Know Web GIS”,ESRI Press.
3. Kathryn Keranen and Robert Kolvoord (2017), “Making Spatial Decisions Using ArcGIS Pro: A Workbook”, ESRI Press.
4. Victor Mesev (2007),“Integration of GIS and Remote Sensing”, John Wiley
5. Harsan Karimi (2001), “Handbook of Research on Geo-informatics, GI Global.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	1	-	3	2
CO2	2	2	1	-	3	1
CO3	3	3	2	2	2	2
CO4	1	1	1	-	3	2
CO5	1	1	2	1	3	-
CO6	3	2	3	1	3	1
Average	2	2	2	1	3	2

H-High M-Moderate L-Low

TP3121	AREA PLANNING STUDIO	L	T	P/S	C
		0	0	10	5

COURSE OBJECTIVE

- Understand the spatial structure, social dynamics, and development issues in rural settlements through field-based studies.
- Understand the technical and regulatory aspects of designing residential layouts in transitional and peri-urban areas.
- Understand land use zones, functional relationships, and urban spatial organization for effective land use planning.
- Understand methods of land use and socio-economic data collection, analysis, and representation in rural and urban contexts.
- Understand the importance of integrating field surveys, planning guidelines, and design approaches into realistic spatial proposals.

COURSE CONTENT

A) RURAL PLANNING AND DEVELOPMENT

Preparation of Rural Development Plan for the identified villages by appreciating its area and perception of spaces – Studying elements, Structure of village, Structure of administration, Spatial aspects and its transformation, livelihood of rural communities, Current Rural Improvement Programmes and required planning interventions - Household Survey and Identification of problems.

B) PLANNING AT RESIDENTIAL LAYOUT LEVEL

Preparation of residential layout involves, Review of literature - Existing act and byelaws - Design criteria's - Study of existing layouts - Site analysis - Alternative designs - Finalization of designs, Cost of the projects and model. Study area preferably the transformative rural area/areas where new developments are coming up in the close urban.

C) STUDY ON URBAN LAND USE

Land use Zones – Activities that are permissible in each zone – Their functional and spatial characteristics – Land and building use survey - Issues related to functions and spaces - Understanding the linkage between different aspects of socio-economic life in relation to the land use in the cities.

TOTAL : 150 PERIODS

COURSE OUTCOMES

Upon the completion of this course, the students would be able:

CO1 Understand the rural settlement structure, spatial patterns, administrative hierarchy, and ongoing development programs through field observation and analysis.

CO2 Understand the planning norms, design standards, and legal regulations guiding residential layout planning in peri-urban or transitional areas.

CO3 Analyze rural and urban survey data to identify spatial problems and assess the socio-economic dimensions influencing land use.

CO4 Apply planning and design principles to prepare a technically sound residential layout plan, integrating site conditions and statutory requirements.

CO5 Evaluate the interrelationships between land use functions, zoning regulations, and socio-economic needs in rural and urban contexts.

CO6 Create integrated spatial development proposals for rural development plans, residential layouts, and urban land use improvement strategies using planning tools and graphical representations.

Text Books

1. Dutsche Gesellschaft fur International Zusammenarbeit (2012), “Land Use Planning: Concepts, Tools and Application”, Ministry for Economic Cooperation and Development, Germany.
2. Government of Tamil Nadu (1971), “Tamil Nadu Town and Country Planning Act, 1971”, Directorate of Town and Country Planning, TN.
3. Thomas Russ (2009),“Site Planning and Design Handbook”, Mcgraw Hill Publications.
4. Singh K (2009),“Rural Development Principles, Policies and Management”, Sage Publications.
5. N.Narayanasamy (2009),“Participatory Rural Appraisal: Principles, Methods and Application”, Sage Publications.

References

1. Government of India (2015), “Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi.
2. Ward.S.V (2004), “Planning and Urban Change”, Sage Publication.
3. Tiesdell (2012), “Shaping Places: Urban Planning, Design and Development”, Oxon, Routledge.
4. Parolek (2008), “Form Based Codes: A Guide for Planners, Urban Designers, Municipalities and Developers”, New Jersey, Wiley.
5. Philip Berke (2006), “Urban Land Use Planning”, University of Illinois Press.

CO-PO Mapping

COURSE OUTCOME	PROGRAMME OUTCOME					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	2	2	3	1	3	2
CO2	3	3	2	2	1	1
CO3	3	2	1	1	2	2
CO4	2	3	2	3	2	3
CO5	3	2	2	2	2	3
CO6	2	1	3	2	2	1
Average	3	2	2	2	2	2

H-High M-Moderate L-Low