First Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 111	Fundamentals of Urban & Regional Planning	3	-	-	3
PLA 112	Fundamentals of Building Structure, Materials and Construction	3	-	-	3
PLA 113	Evolution of Aesthetic, Culture and Technology	3	-	-	3
PLA 114	Statistical and Quantitative Methods in Planning - I	3	-	3	3
PLA 115	Basic Design	3	-	3	3
PLA 116	Technical Report Writing and Research Methodology*	-	1	2	2
PLA 117	Planning Studio –I* (Graphics and Presentation Techniques)	-	2	9	5
	Total Credits				**22**

Second Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 121	Elements of Economics	3	-	-	3
PLA 122	Surveying and Photogrammetry*	2	-	4	3
PLA 123	Specifications, Estimation and Valuation	2	1	-	3
PLA 124	Statistical and Quantitative Methods in Planning -II	3	-	2	3
PLA 125	Techniques of Planning –I	3	-	-	3
PLA 126	Applied Geology and Hydrology	3	1	-	2
PLA 127	Planning Studio –II* (Graphics and Presentation Techniques)	-	2	9	5
	Total Credits				**22**

Third Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 211	Planning Theory -I	3	-	-	3
PLA 212	Settlement Geography	3	-	-	3
PLA 213	Techniques of Planning -II	2	1	-	3
PLA 214	Traffic and Transport Planning –I	3	3	-	3
PLA 215	Demography and Urbanization	3	-	-	3
PLA 216	Computer Aided Design (CAD)*	-	2	4	2
PLA 217	Planning Studio – III*(Neighborhood and Site Planning)	-	2	9	5
	Total Credits				22

Fourth Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 221	Planning Theory -II	3	-	-	3
PLA222	Planning Practice -I	3	-	-	3
PLA 223	Traffic and Transport Planning–II	3	3	-	3
PLA 224	Ecology, Environment and Resource Management	3	-	-	3
PLA 225	Settlement Sociology	2	1	-	3
PLA 226	Housing and Community Planning*	3	3	-	2
PLA 227	Planning Studio –IV* (Transport Planning)	-	2	9	5
	Total Credits				22

Fifth Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 311	Real Estate Planning and Management	3	-	-	3
PLA 312	Planning and Management of Utilities and Services	3	-	-	3
PLA 313	Planning Legislation	3	-	-	3
PLA 314	Sustainable Urban Development	3	-	-	3
PLA 315	Geo-Informatics for Planning	3	-	3	3
PLA 316	Landscape Planning and Design*	3	-	3	2
PLA 317	Planning Studio –V* (Area Planning)	-	2	9	5
	Total Credits				22

Sixth Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 321	Urban Management - I	3	-	-	3
PLA 322	Urban Renewal and Conservation	3	-	-	3
PLA 323	Project Formulation, Appraisal and Management	2	1	-	3
PLA 324	Introduction to Urban Design	3	-	2	3
PLA 325	Planning and Management of Informal Sector	3	2	-	3
PLA 326	GIS for Planning*	3	-	2	2
PLA 327	Planning Studio – VI* (Urban Development Plan)	-	2	9	5
	Total Credits				22
Mandatory Training of Two months after Sixth Semester during Summer Vacation for which credits will be awarded in 7th semester					

Seventh Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 411	Introduction to Regional Planning	3	-	-	3
PLA 412	Urban and Rural Governance	3	-	-	3
PLA 413	Urban Finance	3	-	-	3
	Elective -I	3	2	-	3
PLA 414	Metropolitan Planning, Development and Management	3	2	-	3
PLA 415	Training Review & Dissertation*	2	3	-	2
PLA 416	Planning Studio – VII* (Regional Plan)	-	2	9	5
	Total Credits			22	

Elective - I

PLA 431 Infrastructure Planning, Development and Management
PLA 432 Rural Development and Management
PLA 433 Disaster Risk Mitigation and Management

Eighth Semester B. Planning

Course no.	Subject	Periods per week			Credits
		L	T	P	
PLA 421	Urban Management - II	3	2	-	3
PLA 422	Planning Practice -II	3	2	-	3
	Elective - II	3	2	-	3
PLA 423	General proficiency*	-	-	-	2
PLA 424	Planning Thesis*	-	-	20	9
	Total Credits				**20**

Elective - II

PLA 434 Environmental Impact Assessment
PLA 435 PPP in Urban Environmental Services
PLA 436 Ethics in Planning

Note: subjects marked with * are non-theory subjects.

DETAILED COURSE - B. PLANNING

PLA 111: Fundamentals of Urban & Regional Planning

Introduction to planning discipline: Defining planning as a discipline, it's multidisciplinary nature, role of a planner. Fields of planning - Urban, regional, environmental, transport and infrastructure.

Evolution of settlements: Settlement size, pattern and structure as a function of socio-cultural, economic, military and religious factors in historical cities. Variations in civilizations - Egyptian, Mesopotamian, Greek, Roman. Town planning in Medieval times and in Renaissance Europe.

Planning in post industrial revolution era: Origin and evolution of civic planning, impact of industrial revolution on town and regional planning. Concepts of garden city, city beautiful, linear city etc. Contributions of all leading masters in planning. Socio-economic impacts of growth of urban areas, rural-urban migration. Impact of technology on urban forms. Urban structure and form - land use distribution.

Definitions and basis of planning: Various definitions of town and country planning, goals and objectives of planning, components of planning, benefits of planning, arguments for and against planning. Economics and social planning as bases of physical planning. Planning process and levels of planning in India.

Types of plans: Definition of development plan. Introduction to types of development plans: master plan, city development plan, structure plan, district plan, action area plan, subject plan, comprehensive planning, zonal plans etc. Hierarchy of plans: regional plan, sub-regional plan, sector plans and spatial plans, town planning schemes.

PLA112: Fundamentals of Building Structure, Materials and Construction

Introduction to building elements, materials and components: Introduction to building elements such as foundations, walls, roofs, floors etc. Introduction to materials of construction like brick, timber, stone, R.C.C., steel etc. Introduction to structural systems of buildings, such as load bearing and framed. Soil structure and interaction with buildings.

Forces on buildings: Forces of compression and tension, concept of equilibrium forces and conditions of equilibrium, concept of elasticity and plasticity, Hooke's law, stress - strain relationship of tension and compression. Shear force and bending moment.

RCC structures: Behavior and design principles of RCC columns, beams and slabs. Construction system such as reinforced concrete, pre-stressed concrete and prefab system and modular coordination. Various structural systems for high rise buildings. Introduction to relevant codes.

Steel structures: Use of steel in buildings, structural system in steel, high rise and long span structures. Introduction to relevant codes.

Landscaping site development and layouts: Broad overview of open space design and detailing. Hardscaping and softscaping, materials used for pathways, green areas, paved outdoor areas etc. Principles and components of site-development and setting out of buildings on site. Introduction to NBC and other standards.

Service lines and networks: Road layouts, sewer and storm water drainage system, water supply lines, service duct under the road. Electrical and telecom networks. Overview of materials used for site layouts and site networks.

PLA 113: Evolution of Aesthetic, Culture and Technology

Appreciation and communication in arts and aesthetics: Importance of creative and visual arts, art as a medium of communication, art as a means of social expression, human habitat as an artistic expression.

Aesthetic theories and principles: Concepts of beauty and ugliness, classical theories of aesthetics, relationship of aesthetics with other cultural values. Concepts of scale, space, form and structure. Concepts of time as a dimension of built form, role of climate in evolution of settlement form.

Role of culture and technology in planning: Definition and symbols of culture, transmission of culture. Cultural traits of ethnic groups and their expression in built form. Aesthetics of mixed culture and global culture. Role of technology in changing arts, culture, aesthetics, built form and structure of human habitat.

Overview of city forms and evolution processes: Visual appreciation of the city forms across cultures, space and time - taking examples from specific urban centers of importance in the context of aesthetic, cultural and technological evolution.

Visual study of the city - artifacts and the urban arts: Understanding of urban form through study of landmarks and elements of visual interest in the city through interactive learning processes.

PLA 114: Statistical and Quantitative Methods in Planning – I

Introduction: Statistical data and methods, collection of data, sources of data, questionnaire design.

Sampling: Introduction to sampling, simple random sampling, stratified sampling, etc. Data coding, data verification and design of sample surveys.

Data presentation: Statistical tables, their types and comparisons. Methods of graphic presentation, preparation of various types of charts like bar charts, pictography, pie charts, histograms, etc. Use of statistical softwares.

Descriptive statistics: Raw data, frequency distribution, selecting number of classes, class limits, curves, cumulative frequency distribution. Measures of central tendency including arithmetic mean, median, mode, geometric mean and harmonic mean. Measures of absolute dispersion, range, quartile deviation, average deviation, standard deviation, skewness and kurtosis.

Note: Assignments shall be done using software packages for statistical analysis

PLA 115: Basic Design

Appreciation and presentation: Appreciation of natural forms, representation of natural elements in graphic form, concepts of abstraction. Appreciation and design of logo and insignia. Format of presentation drawings.

Principles of composition: Understanding of principles of ordering and composition. Appreciation of principles of 2-D and 3-D composition. Project presentation modes including physical models, oral, digital and manual sketches.

Anthropometric and ergonometric for room layouts design: Anthropometric, human activity and space use. Furniture layout of a room, building circulation / flow diagrams. Concepts of space, form and function.

Architectural space standards: Introduction to architectural space standards, preparation of design briefs, appreciation of different building types.

Building design, factors and concepts: Factors and concepts related to building design including climate, site characteristics, landform, visual elements, behavioral factors, space utilization etc.

PLA 116: Technical Report Writing*

Types and classification of reports: Types of reports. Difference between technical, scientific, legal and other types of communications. Specific characteristics of writing technical reports.

Reporting communication: English comprehension and oral communication. Presentation techniques in digital and oral format for group discussion in seminars and meetings.

Computer application: Data processing, word processing and presentation software. Spread sheets and databases. MS Office applications (Word, Excel, Access, Power point, etc.). Presentation and photoediting software such as Google sketch-up, Photoshop, Coral draw, etc.

Format and elements of reports: Preface, acknowledgements, contents, indexing, key word indexing, introduction, body terminal section, appendices, references. Use of word processing software and templates for report writing.

Special type of writing: Articles and manuals, planning and preparation of technical articles for publications, popular articles.

Formal letters and specifications: Styles and formats for business and official letters, , requests for specifications and other types of business enquiries, replies to bidding for tenders and conduct of meetings, agendas and minutes of official records and meetings.

PLA 117: Planning Studio –I* (Graphics and Presentation Techniques)

Introduction to drawing equipments and mediums, importance of graphics and visual presentations. Use of points, lines, polygons and curved lines. Line thicknesses and intensities, texture, colour and tone in materials and graphics.

Concepts of scales and proportions: Sketching of human figures, activities, natural and man-made elements. Types of scales including plain and diagonal scales. Lettering in various proportions.

Geometric projections: Orthographic, isometric and perspective projections of one, two and three dimensional objects.

Measured drawings: Measured drawings of simple buildings - Plans, elevations, and sections.

PLA 121: Elements of Economics

Definition and scope of economics: Central problems of economics, micro and macroeconomic decisions, use of economics in planning.

Theory of demand and supply: Law of demand and supply, elasticity of demand and supply, its use in planning.

Theory of firm production: Perfect and imperfect market types, market demand and supply, pricing under different market conditions, theory of production, factors of production, costs, scale of production, and economies of scale.

Concept of income, employment and money: Classical and modern approaches, growth and development indicators, measures of national income, defining development and under development.

Introduction to urban and regional economics: Use of economic concepts in urban planning, housing, transport, taxes, land-use, location, etc. Use of economic concepts in regional planning, location disparities in development, input-output techniques, sectoral development, etc.

PLA 122: Surveying and Photogrammetry*

Fundamentals of Surveying: Definitions, classifications, use, objectives and basic principles of surveying. Classifications of measurements and units, concepts of scales, maps and plan. Use of conventional symbols. Stages in surveying works - field works, office works, care and adjustment of the instruments. Errors in surveying - Sources and kinds.

Chain surveying: Definition, application, advantages and disadvantages, principles, instruments used, steps in chain survey. Definition of framework of survey, survey lines, survey stations, base line, tie line, check line, ranging and chaining a survey line, off-sets - use and types, Errors and obstacles in chaining. Plotting chain survey to prepare a plan with practical examples.

Compass surveying: Definition of compass surveying, traversing, types of traversing, applications, advantages and disadvantages, principles and instruments used in compass surveying. Concept of bearings, meridian and angles, designation of bearing, fore bearing and back bearing, local attraction. Plotting of compass survey data to prepare a plan of a small area.

Plane table surveying and computation of areas: Definition, application, advantages and disadvantages of plane table survey, instruments used, working operation. Methods of plane table survey and preparation of map of a small area with plane table survey. General

methods of determining area, instrument used and their principles for computing area. Determination of area from the plotted map with different methods and comparing them.

Leveling and contouring: Definition, principle, methods and application of leveling, instruments used and the principles of their work. Concepts of level surface, level line, horizontal plane, horizontal line, vertical line, datum, bench marks. Theory of direct leveling, differential leveling and reduction of levels, classification of leveling and errors in leveling. Definition and application of contouring, characteristics and interpretation of contour lines. Methods of locating contours.

Photogrammetry: Photogrammetry as an alternative tool for surveying. Introduction to aerial remote sensing and aerial photographs. Classification, principles of stereoscopic vision. Principles and use of basic instruments such as stereo-pair, pocket and mirror stereoscopes, parallax bars, etc. Principles of photogrammetry, measurement of heights and depths. Introduction to digital photogrammetry, GPS and Total Station. Applications in urban and regional planning with laboratory exercises.

PLA 123: Specifications, Estimation and Valuation

Introduction: Significance and methods of quantity surveying and writing specifications. Classifications of specifications, sources of specifications. Types and methods of cost estimation for different types of projects. Rates and sources of rates for different components of planning projects, cost index. General specifications for common building materials and building items.

Detailed specifications: Site development and earth works, water supply network and distribution systems, sewer systems, electrical and telephone networks, landscaping, roads, pathways, boundary wall, pools, lighting.

Estimation: Cost estimation and determination of rates for different types of housing. Cost estimation and determination of rates of works involved in the infrastructure services (roads, water supply, sewer systems etc.). Costing procedure for different land use categories, development works, interest on investment, and phasing. Preparation of detailed development costs for planning schemes for an approximate population of 5,000 as per norms and standards.

Valuation: Purpose of valuation, definition and importance of valuation of land and buildings, scrap value, salvage value, outgoings, capitalized value of buildings, appreciation and depreciation.

PLA 124: Statistical and Quantitative Methods in Planning –II

Probability and sample distribution: Introduction, addition rule, conditional probability, multiplication rule, random variables and probability distribution, mathematical expectation, binomial distribution and normal distribution.

Correlation: Degree of correlation, correlation coefficient, methods of concurrent deviation, coefficient of rank correlation, partial correlation analysis and multiple correlations.

Linear regression analysis: Linear and non-linear regression, lines of regression, coefficient of regression. Application of regression analysis in planning.

Time series analysis: Variation in time series, trend analysis, cyclical variation, seasonal variation, irregular variation, time series analysis forecasting. Application of time series in planning.

Index number: Defining an index number, types and use of index numbers, construction of index number, Simple aggregate method etc. Cost of living index number and its construction. Application of index number in planning.

Note: Assignments shall be done using software packages for statistical analysis.

PLA 125: Techniques of Planning – I

Techniques of preparing base maps: Choice of appropriate scale for region and settlement level plans, town development plans, zonal development plans, layout plans. Graphical, linear and areal scales. Contents of base maps at various scales, notations, measurement of areas.

Database for planning and socio - economic surveys: Data requirements 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, self-surveys, interviews, mailed questionnaires and observer participation.

Physical surveys: Techniques of conducting surveys for land-use, building use, density, structural condition of buildings, heights of building, land utilization and physical features of land. Data requirement for various types of regional plans, techniques for conducting regional surveys.

Graphic presentation of statistical data: Application of statistical data analyses and presentation in the context of planning. Tabulation of data, and graphical presentation of data like pie diagrams, histograms, bar charts, normal, semi-log and double-log graphs and understanding their suitability and uses. Color, black and white presentation techniques.

Graphic presentation of spatial data: Land use classification, coding and analysis, residential and non-residential density patterns and analysis. Color, black and white presentation techniques.

PLA 126: Applied Geology and Hydrology

Introductory earth science and meteorology: Earth as a planet, the solar system, movement of the earth, atmosphere and its composition, composition of the earth, the earth processes, geological cycles, igneous activities, volcanoes, minerals and their properties. Rock types and their character, bedding, outcrop and strikes. Rock cycle and Indian stratigraphy.

Geological structure, landforms, weathering, landslides and mass wasting: Description and classification of folds, faults, joints, unconformities, fault planes, geometrical destruction, etc. Land form types, erosional, depositional fluvial, glacial, deolian and marine. Rock weathering and climate, soil formation, landslides, sources and causes of crystal displacements. Instability of hill slopes and prevention.

Earthquakes: Historical account, tectonic behaviour and seismic belts, causes, intensity and magnitude of earthquakes, earthquake waves and their character, particle motion and behaviour in various geological formations, seismography. Accelerograms and their interpretation. Seismic zoning in India and norms for Earthquake resistant structures.

Selection of site and foundations: General considerations, sources of preliminary geological data particularly related to Indian stratigraphic sequences and the types of foundations. Nature and preparation of foundation for road, bridge, building and other geo-technical structures. Geophysical explorations.

Ground water: Concept and role in town planning of different types of terrain, hydrologic cycle, vertical distribution of groundwater, interstices. Groundwater bearing properties of different lithological formations, porosity, permeability, specific yield, specific retention, transmissivity and storage coefficient. Ground water in igneous, sedimentary and metamorphic rocks. Aquifers, types and classification (geological). Aquifuge, water table and piezometric surface. Surface water reservoirs and springs. Artificial recharge and ground water mound hydrological features in relation of seepage, fluctuation of water table and hydrographs, geological structure and underground passages for water supply.

PLA 127: Planning Studio –II*(Graphics and Presentation Techniques)

Appreciation studies: Appreciation studies of residential, commercial, institutional areas in small urban and / or rural settlements. Data collection through site visits, surveys and documentation. Graphic presentation of collected primary and secondary data. Preparation of base maps at the levels of site, area, zone, city, region, etc. Preparation of key maps.

Drawings: Composition of drawings, proportions of lettering and line thickness, standard symbols, line-styles, color-coding. Legend and drawing formats. Appreciation of thematic maps of various levels of planning.

Introduction to photography: Basic principles, composition for architectural building photographs and planning, site photographs.

Technical communication: Graphic presentation and communication skills. Use of power point and multi-media projections.

PLA 211: Planning Theory -I

Defining planning theory: Definitions of theory in general. Definitions of planning theory including theory of planning, theory in planning and theory about planning. Paradigms of planning practice by John Muller, Kuhn and others. Various issues in planning theory and practice.

Theories of urban structure: Theories of urban structure including concentric zone theory, sector theory, multiple nuclei theory and other latest theories. Land-use and land-value. Theory of William Alonso on location and land-use. City as an organism: A physical entity, social entity, economic entity and political entity.

Sustainability, rationality and globalization: Sustainability and rationality in planning. Components of sustainable urban and regional development. Globalization,

internationalization, modernism and postmodernism debate. Impact of information technology on urban economics and politics.

Compact city approach: Concept, advantages and limitations. Forms of cities in developing world, forms of cities in the developed world. Forms of cities in the former and present socialist countries.

Participation and planning: Public interest and its forms. History and significance of public participation. Methods of public participation. Impediments to public participation and conditions for effective public participation. Public participation and empowerment. Participation, policy formulation and implementation.

Planning, implementation and evaluation: Need for evaluation. Inseparability of planning and evaluation. Planning theories and evaluation. Methods of evaluating development plans. Theories of implementation of planning policies and development plans.

PLA 212: Settlement Geography

Introduction: Need for study of settlement geography. Definition of settlement. Ranking of towns. Site and situation patterns. Settlement morphology.

Spatial distribution of settlements: Settlement in regional context. Spatial models of location, size and spacing of settlements. Central place theory. Concepts of complementary area, central goods and services, range, threshold, etc. City-region relationship. Inter-urban inequalities. Interaction among settlements. Gravity model. Classification of settlements.

Urban land-use studies: Classification of land-use in urban area. Analysis of location and structure and models of growth patterns of CBD, industrial areas and residential areas. Intra - urban inequalities.

Image of the City: Typology of urban perception, impact of socio-economic status of people on the image of a city. Components forming the image of a city. Land marks, edges etc.

Regions: Types of regions, delineation of regions, city region, structure of city region, area of influence and dominance, shadow regions. Trickle down effects, Rural-urban fringes, its structure, stages of growth, its role in urban growth. Rural-urban continuum

PLA 213: Techniques of Planning -II

Methods of analysis: Methods of analysis of socio-economic and physical data. Use of techniques of location quotient, coefficient of localization. Locational attributes of activity and population. Techniques for understanding structure of urban areas, land values and density patterns.

Spatial standards: Formulation of spatial standards for residential, industrial, commercial and recreational areas, space standards for facility areas, utilities and networks. Population and distance criteria. Performance standards. Case studies.

Regional surveys: Concept and need for regional planning, Region, fact or fallacy. Formal, functional, planning regions. Regional delineation techniques, factor analysis, cluster analysis and row analysis. Case studies in regional delineation.

Plan preparation techniques: Setting of goals and objectives. Methodologies for preparation of urban regional development plans, master plans, structure plan and strategy plan techniques. Plan implementation techniques. Public participation and plan implementation. Techniques of urban renewal and central area re-development. Contents of a Master plan, Regional plan, etc.

Introduction to advanced techniques: Thresholds analysis, retail location and industrial location analysis. Intervening opportunity models. Linear programming. Simulation.

PLA 214: Traffic and Transport Planning –I

Transport development: Economic, political and social significance and transport development. Characteristics and role of various forms of transport, road, railways, waterways and airways. Transport policies and programmes in India before and after independence. Transport co-ordination

Road development: Historical perspective of road development in India. Current trends in road development. Accessibility and priority index in traffic network planning.

Geometric design: Urban and Rural road classification, design control and criteria, sight distances and control of access. At-grade and grade separated intersections, junction improvement techniques.

Traffic surveys: Study area definitions, surveys and their types, sampling of travel methods, survey techniques. Volume count, origin-destination, speed and delay, parking and accidents surveys - their need, design of proforma, methods of conducting surveys, analysis and interpretation, processing of travel data, analysis and interpretation of traffic studies.

Highway capacity: Early studies, concept of PCU and level of service. Capacity of uninterrupted flow conditions, factors affecting capacity and level of service. Capacity of rural and urban roads and capacity at intersections.

PLA 215: Demography and Urbanization

Study of population: Demographic variables: Fertility, mortality, migration, etc. Evolution of population study, contribution of Malthus. Mortality-trends, biological and social factors and mortality-gender, race, social structure, life style, social status, occupation etc. Measures of mortality - crude and age-specific death rates. Infant mortality, adjusted or standardized death rates. Neonatal mortality rate.

Fertility: Fertility trends, fertility and social behavior, fertility and biological behaviour. Differential fertility, ethnic groups, socio-economical group mobility, location etc. Measures of fertility, crude birth rate, age-specific fertility rate, total fertility rate and net reproduction rate.

Migration: Causes and consequences of population movement. Reasons and types of migration trends. Methods of measuring volumes of migration - Direct and indirect measures. Effect of migration of composition of population.

Study of demography: Source of demographic data. Census of India in conducting census and its role as a data warehouse population structure and composition, age sex composition,

sex ratio, dependency ratio, child woman ratio. Measures of age-sex structure, age-sex pyramid, population composition. Marital status, caste region, literacy level, etc.

Life table techniques: Techniques in preparing life table, abridged life table. Population estimation, projection and population forecasting. Basic cohorts survival model, inter regional cohorts survival model.

Urbanization in India: A brief history of urbanization in India. Mughal and British influences of India cities. Post-independence urbanization. Urbanization process as influenced by socio-cultural, political, economic and administrative factors. Definition of urban centres, concepts of rural-urban continuum and dichotomy. Census definition of urban places town, cities, town groups, urban agglomeration, standard urban area metropolis, megalopolis etc. functional classification of urban places.

Role of urban area as settlement: Settlement system, Census classification of settlements, primate city, rank-size rule, urbanization, industrialization and urban development. Push and pull factors. Migration trends and impacts on urban and rural development.

Policies and strategies for directing urbanization trends in India: Over view of world urbanization, National urbanization policy, basic issues in urbanization policy. Role of national and state level policies. Five year plans, latest attempts at urbanization policy formulation in the country. Salient features of the report of the national commission of urbanization.

PLA 216: Computer Aided Design (CAD)*

Drafting in CAD: Need for automated design and drafting. Tools for automated designs and drafting. Elements of spatial data in CAD - Arcs, lines, rectangles, poly-lines, points, circles, donuts, layers, grids, snaps and object snaps, etc.

Editing and controlling display in CAD: Move, scale, copy, offset, change, trim, extend, mirror, divide, measure, array, break, hatch, block, zoom, regen, view, pan, fonts, etc.

Data conversions: Paper maps, digital layout maps, on screen digitization. Base map evaluation, scanning the maps, digitization, scale conversion, symbolization, layer control, plotting and related commands. Exercises with case studies of small layouts and large scale regional level plans may be taken up.

Advanced techniques: Advanced features- X-ref, dynamic blocks, 2D and 3D conversion, perspective view, rendering, use of material finishes and lighting.

Limitations of CAD: Limitations of Computer aided design and drafting in planning. Non-linking of spatial and attribute data. Need for GIS packages for handling spatial and attribute data.

PLA 217: Planning Studio – III* (Neighborhood and Site Planning)

Site analysis: Site analysis, development standards and preparation of the design brief. Various considerations for site layout, conceptual approach to site planning.

Designing and planning: Design and preparation of plan, sections and elevation of low rise and high rise apartments taking into account the building byelaws and zoning regulations. Preparation of presentation drawings.

Layouts: Preparation of preliminary layout and area analysis. Final layout showing the circulation and basic infrastructure.

Planning working drawings: Introduction to the working drawings. Preparation of plans, sections, elevations and important details of an apartment unit.

Costing: Rough costing of the scheme, preparation of the model to an appropriate scale.

PLA 221: Planning Theory -II

Scientific rationalism and planning: Defining instrumental rationality. Systems view of planning with a focus on contributions of J.B. McLoughlin and others. Chief characteristics of Comprehensive rational planning model and implications for planning practice. Systemic change.

Advocacy planning, pluralism and equity planning: Meaning, historical background, purpose and main features of advocacy planning model. Relevance for planning practice. Equity and its various definitions. Major components of the Equity Planning Model. Implications on the role of planners in planning practice.

Political economy theories and the city: Defining the term political economy. Role of the state in planning. Contributions of David Harvey, Manuel Castells and others. Richard Foglesong and the property contradiction.

Collaborative and communicative planning: Various components of Collaborative Planning Model. Contributions of Patsy Healey and Judith Innes and others. Deliberative policy analysis. Role of trust in planning. Planning as persuasive storytelling.

Capabilities, race, gender, religion and caste: Defining functioning and capabilities. Exploring relevance of Sen and Nussbaum's capabilities to planning. Role of planning and planners in enhancing capabilities of the poor. Capabilities perspective on slums and squatters. Feminist planning theory. Planning, caste and religion. Planning rights and responsibilities

PLA 222: Planning Practice -I

Planning policy and framework: Role of Town and country planning organization at central level and town and country planning department at state level. Actors framing public planning policies. Influences of various stakeholders on policy formulation. Implementation of public policies. Legal basis of planning. Types of Plans and detailed methodologies for Perspective plan, Master Plan, Structure Plan, Action Area Plan, etc.

Planning approaches: Strategic planning, advocacy planning, mixed scanning approach, sectoral approach, systems approach, transactive planning, incrementalism, communicative planning. Review of Comprehensive development plans in India.

Development authorities: Types, functions and spatial jurisdictions of development authorities. Reasons for the establishment of development authorities. Place of development authorities in local government.

Development and development regulations: Working of building bye-laws in planning practice. Requirements for grant of building permissions. Streamlining the development control regulations. Making development control regulations work for the poor. UDPFI guidelines. National Building Code and its implementation.

Coordination in planning practice: Meaning and types of coordination. Mechanisms of coordination. Case examples of coordination from planning practice.

Privatization of planning practice: History of privatization of planning. Special economic zones. Retail sector developments. Infrastructure development by the private sector.

PLA 223: Traffic and Transport Planning –II

Evaluation of urban structures: Transport systems, infrastructure and management, transport systems and their types, design and operating characteristics, urban road hierarchy, planning engineering and management criteria for road and junction improvements, arterial improvement techniques.

Planning and management of transport system: Introduction to transport planning process. Trip generation, trip distribution, trip assignment, modal split, land use transportation models. Programming and scheduling, existing organizational and legal framework, traffic and environmental management techniques. Review of the existing traffic management schemes in case cities.

Regional transport systems: Importance of accessibility in regional transport planning, role of road, rail, air and water transport systems, regional transport systems planning. Road network planning for micro regions.

Transport and environment: Traffic noise, factors affecting noise, noise abatement measures, standards. Air pollution standards. Traffic safety. Accident reporting and recording systems, factors affecting road safety. Transport planning for target groups-children adults, handicapped and women. Norms and guidelines for highway landscape. Street lighting types, standards and design considerations.

Economic - evaluation and transport policies: Pricing and funding of transport service and systems, economic appraisal of highway and transport projects. Techniques for estimating direct and indirect road user costs benefits, value of time. Review of national, state and local level transport policies and their relevance in spatial and economic planning, pricing and funding of transport systems. Energy and environmental implications in transport. Transport policy planning. Transport planning in developing countries.

PLA 224: Ecology, Environment and Resource Management

Introduction: Meaning, scope and evolution of ecology. Man, environment and ecosystem. Components of nature, basic concepts and processes of ecology. Flow of material, water

energy, invasion, succession, predation, regulatory forces, adaptation, trophic levels, food chain, food web, ecological pyramids. Environmental zones.

Ecosystem and its relevance to environment: Resources and human settlements impact of advanced agricultural methods, urbanization and industrialization on nature. Urban ecosystem approach evolution and significance. Soil, water, land, vegetation and solar, biomass, wind, hydro energy resources. Settlement planning and energy conservation.

Quantitative ecology: Introduction to quantitative ecology, identification of ecological parameters for planning at different levels - Site planning, settlement planning and regional planning. Data needs and format for data collection. Types of analysis required to evolve ecological parameters. Planning for environmentally sensitive areas.

Environmental impact studies: EIA - meaning, significance and framework. Methodologies, checklist, matrices, network and social cost-benefit analysis. Sources and acquisition of environmental information. Environmental land use classification. Environment impact studies of development projects.

Environmental policies: Global and national policies on environment. Five year plans in relation to environmental aspects. Legal measure for protection of environment. Environmental awareness and education in India. Agencies involved in environment protection. Public participation. Role of planners in shaping the future environment.

PLA 225: Settlement Sociology

Understanding sociology: Sociology as a science. Sociological imagination and rethinking. Applied sociology.

Sociological perspective and organizing social life: Functionalist perspective, conflict perspective, internationalist perspective. Culture of space and cultural ecology. Social structure and social control. Stratification and social inequality. Social mobility and social defiance.

Social institutions: Family, kinship pattern and authority. Religion as social work and significance in planning. Voluntary associations (identifying NGOs and involving them as partners of development, operational issues). Groups (primary, secondary and reference groups).

Community development: Development induced displacement (anthrop-social considerations). Resettlement and rehabilitation. Neighborhood pattern and development strategy. Rural and urban issues. Community based and workshop based methods. Qualitative data Analysis and Report writing.

Gender and development: Gender and sex. Gender sensitivity. Gender and development planning. Gender and implications for spatial planning.

PLA 226: Housing and Community Planning*

Introduction: Significance of housing in National development goals. Equity and efficiency parameters of housing. Current issues in housing.

Assessing housing: Existing housing statistics. Urban and rural housing statistics. Introduction to concepts of housing shortage, housing need, quantitative and qualitative aspects of housing.

Housing demand: Understanding current methods of demand assessment. Knowledge of data sources and their use and interpretation. Census, NSSO and other data. Limitations of existing methods of assessments.

Housing development process: Understanding of factors affecting residential location, theoretical knowledge of ecological, neo-classical, institutional approach to housing. Housing subsystems and their characteristics. Formal and non-formal housing. Process of public and private sector housing development process. Policy context, actors and their interrelationships. Inner city housing, slums, squatter housing, unauthorized housing. Role of different institutions in housing. International agencies, NGOs, State financing organizations, private developers, cooperatives.

Housing standards and design: Factors determining residential densities. Densities, costs and development control regulations. Housing designs parameters and their relationship to costs. Housing design and climate. Housing for disaster prone areas.

Communities: Its characteristics and housing. Socio-economic implication of slums, clearance / improvement of slum. Sites and services schemes, squatter upgrading, incremental approach.

Housing policy analyses: Understanding and evaluation of housing policy and programmes in India. Five year plans and Central government policy. Policy framework for urban and rural housing. Comparative policy analysis. Housing for the low income groups. Cooperative housing, its objectives and principles. Management and financing of housing projects. Investment in housing in public and private sectors.

PLA 227: Planning Studio –IV*(Transport Planning)

Classification of roads: Understanding of functional and geometric classifications of urban and rural roads and their cross-sectional elements.

Types of transport surveys: Methods, surveys, analysis, presentation of data and also to prepare reports relating to different types of transport surveys.

Road geometries and surveys: Road geometries and road components, traffic volume, origin destination, spot speed, speed and delay, parking and pedestrian.

Road layouts: Design and preparation of layout for road intersections, rotaries and signalized intersections.

Area circulation plan: Preparation of an area circulation plan by studying the existing land use, existing circulation pattern, geometric design, level of services for a small area through networks improvement and low cost traffic management measures.

PLA 311: Real Estate Planning and Management

Land: Economic concepts of land, objectives and scope of land economics. Its relevance for spatial planning. Economic principles of land uses, economic rent, land-use and land values, market mechanism and land use pattern.

Developments of land and land & property valuations: Process, cost of development, source of finance and financial calculation for real estate development. Valuation of land and property- Discounted cash flow method, development method etc.

Real property markets: Heterogeneity and imperfections, valuation of real property - principles and practices. Private ownership and social control of land. Disposal of land. Land development charges and betterment levy. Land use restrictions, compensation and requisition taxation of capital gain on land versus public ownerships. Economic aspects of land policies at various levels of decision making.

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

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

PLA 312: Planning and Management of Utilities and Services

Introduction, basic concepts and theories: Role of physical planner in planning of utilities and services, objectives of utilities and services planning and it implications for public health and environmental protection, familiarizing to CPHEEO manual and guidance.

Storm water system: Definition of hydrology, classification, hydrological cycle and urban water cycle. Types and measurement of precipitation, intensity-duration - frequency relationships, rainfall formula, rainfall maps, significance of interpretation and presentation of rain fall data. Surface water runoff, rational method for estimating run off, hydrograph and its application. Definition of watershed. Flood frequencies, flood protection measures in urban areas. Estimating storm run-off, run-off co-efficient, rainfall intensity, time of concentration. Gravity flow, hydraulic gradient line, manning's formula and nomographs, layout and design of storm water system. General considerations, inlets, self-cleansing velocity, non-scouring velocity, physical layout-design principles, data requirement for hydraulic design of storm water system and computation procedure.

Water supply systems: Surface and ground water sources, quality and quantity requirements, collection and conveyance of water, water requirement for various land uses, factors affecting water demand, per capita requirement and its relationship with population sizes, variation of water consumption. Water treatment methods, treatment plant location, planning of water supply system and their zoning with respect to urban structure. Basic design guidelines and layout of water supply distribution system, water distribution systems in buildings and their design along with their financing. Case study discussion on innovative methods and successful urban water supply system. Significance and methods and advantages of water harvesting system, government initiative for water harvesting system and case study discussion.

Sanitation and sewer system: Sewage disposal methods and their advantages and disadvantages, quantity of sewage, low cost appropriate technologies for sanitation,

standards for Indian cities, characteristics of waste water, industrial pollutants and their effects, sanitary sewer system network and layout, procedure of planning, sewer appurtenances, case study of innovative approaches of sewage disposal in urban area.

Solid waste management: Elements of solid waste management, classification and characteristics of solid wastes, on site collection, storage, transportation and disposal of solid wastes. Processing and treatment of solid wastes, incineration, pyrolysis, land filling and cost aspects of different methods of solid waste, solid waste management issues in Indian cities. Various social aspects of the solid waste management, community participation and involvement of NGOs in efficient solid waste management.

PLA 313: Planning Legislation

Concept of law: Sources of law (Legislation, delegated legislation and precedent). Significance of law and its relationship to planning. Benefits of statutory planning.

Indian constitution: Brief contents of Indian constitution with special reference to fundamental rights and duties of citizens, directive principles of state policy, distribution of legislative powers for enactment of laws. Right to property. Constitutional provision to protect and improve the natural environment.

Laws and acts for planning and development: Evolution of urban and regional planning legislation in India. 73rd and 74th constitutional (amendment) acts. Model Town and Country Planning Acts & UDPFI guidelines, proliferation of laws (Municipal Acts, Urban Development Authority Acts, Housing Board Acts, Improvement Trust Acts, Slum Improvement Acts etc.). Environmental & Pollution Control Acts.

Land acquisition act: Introduction to land acquisition act, 1984. Eminent domain and police powers. Case laws in respect of land acquisition and compensation.

Organizations for plan implementation: Role of different state agencies for plan implementation. Methods of coordination between planning and implementation agencies. Statutory town planning schemes, contemporary model schemes of some states. Significance of enforcement and single window system.

PLA 314: Sustainable Urban Development

Concept and issues: Changing perspectives in man-environment relationship with focus on issues of population, urbanization, resource depletion and pollution. Limits to growth vis-a-vis sustainable economy. Growth and environmental imperatives of developing vs. developed countries. Definitions, concepts and parameters in sustainable development with particular reference to Brundtland Commission, Agenda 21, Eco-City approach, etc.

Methods and techniques: Application of ecological principles in sustainability. Energy and resource cycles, food webs, ecological pyramids and evolution and succession of natural ecosystems.

Carrying capacity based planning: Concept, parameters and indicator measures, models and case studies in urban and regional development. Environmental impact and strategic environmental assessment for urban areas. Ecological footprint analysis of cities. Sustainable lifestyle assessment and behavioural modifications at household levels.

Land, and energy resources: Land capability and suitability analysis in location and planning of urban land uses. Implications of urban form, density, land use pattern and transportation system in land and energy conservation.

Role of water: Urban interference in hydrological cycle, with particular reference to water pollution, water resources, drainage and natural ecosystems. Urban water treatment, recycling and harvesting. Use of non-conventional energy sources in urban development.

Air quality & solid waste management: Sources, types and effects of air pollution and solid waste disposal in cavities, urban industrial processes and land use and transportation implications in air and solid waste pollution. Norms, standards, laws, organizations and policies in urban air quality control and solid waste management. Examples of best practices.

PLA 315: Geo-Informatics for Planning

Remote sensing: Limitations of traditional surveys for planning. Remote sensing - definition, aerial and satellite remote sensing, aerial remote sensing.

Photo interpretation: Aerial photo-interpretation, qualitative and quantitative elements of photo interpretation. Satellite remote sensing, geo-stationary and sun-synchronous satellites, principles of electro-magnetic radiations, resolutions. Introduction to digital image processing. Salient features of popular remote sensing satellites. Applications in planning. Laboratory exercises.

Planning information systems: Systems approach to planning as basis for planning information systems. Systems, hierarchy and types. Data and information, value of information, information flows, loops. Information security and sharing. Information systems, types and limitations.

Human settlements and planning information systems: Human settlements' information needs, scales and levels, pre-conditions for using planning information systems. Introduction to various planning information systems.

Planning information systems in India: Planning information systems -NNRMS, NUIS, national urban observatory, municipal information systems, land information systems, cadastre systems. Applications and limitations. Tools for spatial data handling and introduction to GISs.

PLA 316: Landscape Planning and Design*

Landscape elements: Landscape as an outcome of natural processes. Principles and techniques of design with landform, water and vegetation. The role of surface materials, outdoor fittings and structures. Man-made landscapes in history. A comparative study of the major traditions of landscape design in the east and the west in relation to concepts of space and variations in the use of landscape elements.

Urban landscape: Characteristics and components of open space patterns in towns and cities (traditional and contemporary) basic types - streets, squares, plazas, gardens, *ghats* and *maidans*, public parks at district, local and neighbourhood levels. Park systems.

Landscape design related to land-use, circulation networks and activity. Street furniture as a component of urban landscape.

Landscape aspects of site planning – I: Principles of understanding and evaluating and existing landscape. Development as a response to constraints and opportunities offered by the site. The landscape concept and open space structure as a basic component of the site plan.

Landscape aspects of site planning – II: The role of vegetation-environmental benefits, functional requirements, aesthetic considerations. Typical situations and criteria for design with plants and selection of species. Grading in relation to existing contours, plinth levels, road alignment and storm water drainage. principles of cut and fill.

Elements of landscape planning: The rural landscape. Characteristics, components and change related to agriculture, forestry and development. Western experience of landscape planning. landscape assessment techniques. The concept of landscape quality. Landscape planning as a component of regional development proposals for industrial location (manufacturing and extractive). Environmental conservation, tourism, etc. Landscape planning in the context of urban extensions and new towns. Introduction to landscape ecology and cultural landscapes.

PLA 317: Planning Studio –V*(Area Planning)

Approaches to plan making: The different approaches to plan making. The concepts of master plan, comprehensive development plan - the structure plan, the sector plan, the area / zonal plan, and other types of plan making processes.

Relationship among plans: Relationship of higher order plans with lower order plans.

Framework for zonal plans: The approach to developing the area /zonal plan in the framework of a given master plan.

Planning standards: The study and development of the relevant planning standards for different land uses.

Zonal plans / area plans: Detailing of specific sites in the proposed area / zonal plans, covering different land uses.

PLA 321: Urban Management – I

Role of management in urban development: Definition, objectives and scope of management. Role of management in developing economy. Meaning and theory of organization. Urban development as a decision making process and a corporate activity. Application of management techniques in urban planning and development.

Urban developments in India: Urban development in India - problems and issues, policies, programmes and provisions in the National Five Year Plans. Processes of decision making for urban development at national, regional, state, district and local levels.

Organizations for urban Development: Various national, state, regional, district and local level organizations involved in urban development and management in India, their background, functions, powers, organization structure and resources. Case studies.

Urban developments and public / private sector: Urban development bodies. Urban development authorities - background, functions, powers, organization structure and resources, Case studies. Role of NGOs and private organizations in urban development, relationships with local and state governments.

Financing urban development: Financing urban development projects. Sources of funding - cost recovery, cost subsidization, medium and long term financing. Private investments in urban development projects - prospects and limitations. Municipal financing - sources of revenue and items of expenditure. Financial resource mobilization for urban development particularly for municipal / local bodies.

PLA 322: Urban Renewal and Conservation

Introduction: Overview and introduction of the basic concepts of conservation. Values, attitudes and principles for judging the conservation importance of sites, areas and related typology. Scope and basic technique of urban conservation. Urban renewal as a part of metropolitan plan. Identification of urban renewal areas. Conservation, rehabilitation and redevelopment urban renewal policies and strategies.

Economic, financial and management aspects: Economic and spatial implications of urban renewal programs, mobilization of resources. Incentive zoning and its management of urban renewal areas.

Conservation and development: Economic and social aspects of conservation, traffic and management issues. Conservation policies - case studies.

Slums: Clearance and improvement schemes, planning aspects, land management, social economic issues, public participation, government schemes and their critical evaluation.

Legal and administrative aspects: National and international experience in implementing urban renewal programs. Legal and administrative aspects, archaeological acts / charters pertaining to conservation, development and conservation. Case studies of proposals for urban conservation of sites/ areas in India and abroad.

PLA 323: Project Formulation, Appraisal and Management

Introduction to project formulation, appraisal and management: The concept of projects, importance of project formulation, appraisal and management. Reasons for shortfall in its performance. Scientific management, life cycle of project. Detailed project report, and feasibility studies. Techniques of financial appraisal, payback period, IRR, DCF, NPV and CBR.

Project formulations: Project formulation – definition and objectives. Stages of project formulation and their significance. Methodology for project identification and formulation. Feasibility studies.

Project appraisals: Definition and objectives. Need for project appraisal. Stages of project form Network analysis. CPM, PERT, resource levelling and allocation, time-cost trade off aspects. Bar charts, milestones, standard oriented cost control techniques. Techno-economic analysis of projects. Project appraisal and report.

Project implementation and monitoring: Project implementation, stages of implementation, teamwork, actors in project implementation. Project monitoring - meaning objectives and significance. Monitoring techniques - integrated reporting, milestones, time and cost overrun and under runs, unit index techniques.

Project evaluations: Project evaluation - meaning, objectives, scope, stages, approach and steps, life of a project. Techniques of project evaluation: input analysis, financial cost-benefit analysis, social-cost benefit analysis. Case studies in urban and regional development projects.

PLA 324: Introduction to Urban Design

Introduction to urban design: Urban design as interface between architecture and planning. City as a three dimensional entity. Study of volumes and open spaces at all spatial levels. A brief historic review of the development of the urban design discipline and principles.

Elements of urban design: Urban form as determined by inter-play of masses, voids, building typology. Scale, harmony, symmetry, colour, texture, light and shade. Dominance, height, urban signage and graphics. Organization of spaces and their articulation in the form of squares, streets, vistas and focal points. Image of the city and its components such as edges, paths, landmarks, street features, sky - line, etc. Urban transportation.

Physical and non-physical determinants of urban forms: Activity and the morphology of places. Form, size and structure of cities and the related geometry co-related with their determinants. Case studies of urban design characteristics of cities in India and abroad. Other related issues for public intervention.

Control of urban design: Urban design and its control. Control of visual pollution. Agencies responsible for ensuring better urban design, their roles, powers and limitations.

Contemporary practices: Townscape policies, building byelaws and regulations for existing and emerging areas of development. Special rules for heritage and hill areas.

PLA 325: Planning and Management of Informal Sector

Urban poverty: Dimensions of urban poverty, magnitude of problem, urban poverty alleviation programmes, impact of macro-economic structural adjustment policies on poor urban households.

Basic needs: Development of the concept of basic needs. Identification of basic needs and their provision for various target groups and informal sectors. Standards for basic needs, NGO's and voluntary organizations associated with provision of basic needs.

Alternative approaches for delivery of basic services to the urban poor: Community planning approach, low cost alternatives and institutional reforms approach.

Migratory impulses and impact on informal sector: Characteristics of migrants and their association with growth of informal sector. Socio-economic deprivation and informal sector. Development of informal sector concept. Role of informal sector in housing stock, economy, commercial activities, etc. Implications in physical planning.

Consequences of spontaneous growth: Study of major aspects. Spontaneous living and working, their characteristics and functions in urban context, actions for improvement. Appraisal of the role of government, private and voluntary organizations. Existing management, their organizational set-up and limitations. Planning and development of urban settlements in respect of the spontaneous growth. Case studies from India and other developing countries.

PLA 326: GIS for Planning*

Need for GIS: Maps and spatial information, limitations of typical DBMS and CAD packages. Need for GIS.

Introductions to GIS: Geographic information systems, introduction, components, benefits. Computerized GIS, input and output devices. Spatial data entry into GIS, spatial information security and sharing. Data structure for GIS, vector and raster data structures, comparative advantages and disadvantages. Maps, base maps and thematic maps, mapping and spatial analysis software, linking of attribute data, spatial data aggregation. Spatial data generalization. Limitations of GIS.

GIS modelling: Overlay functions in GIS using attribute over spatial data in modelling. Case study based land suitability analysis. Modelling service area for social infrastructures. Impact analysis.

Specific packages: Introduction and laboratory exercises on selected GIS Packages (e.g., ArcInfo, ArcView, Geo-Concept, Geo-Media, ILWIS, MapInfo, etc.). Comparative advantages and disadvantages. Planning applications.

Advanced concepts in GIS: Introduction to Dynamic GIS. Integration of GIS and digital image processing. Integration of GIS and GPS.

PLA 327: Planning Studio – VI* (Urban Development Plan)

Studying development plans: The study shall involve understanding of contents of various types of development plans and explore their foci.

Selecting the case city or town: Identification and preparation of secondary source information of the towns or cities selected for the study.

Organization of field surveys: Visit to the case study area, collection of primary and secondary data and information on various aspects such as demography, social, economic, housing, transportation, etc. Conduct of primary and secondary surveys.

Analysis and synthesis: Analysis and synthesis of data and information collected on various aspects. Projections of population and workforce. Trends and issues identification.

Plan, policies and proposals: Preparation of policies and proposals with different scenarios and identification of priorities and action areas. Phasing and monitoring. Governance structures for implementation. Land use plan and the plan document.

Note: Each student will be required to undertake training during summer vacation. The exact period and place of training will be decided in consultation with the coordinator in charge of training.

PLA 411: Introduction to Regional Planning

Introduction to region: Concept of regional planning - nature, objectives, levels and aims. Concept of a region, types, and regionalization.

Interactions within a region: Regional interaction - Rank size rule, Settlement patterns, Central place theory. Loschian theory. Regional networks.

Planning processes: Regional planning processes - Identification of plan objectives. Collection and classification and analysis of data. Norms and standards for regional planning. Formulation of alternative plan proposals with respect to population distribution, location of new regional economic activities, infrastructure, plan implementation, etc.

Case studies: Selected case studies in regional development - Rajasthan canal area, South-East resource region, Western *ghats* region, etc. District planning. Metropolitan regions - National capital region, Mumbai metropolitan region, etc.

PLA 412: Urban and Rural Governance

Introduction to urban governance: Meaning of governance and government. Scope of governance, evolution of concept of governance. Theories of local government. History of urban local bodies in India. Evolution of modern urban local governments during British rule. Decentralization of local government. Recommendations of various committees. Politics and progress of decentralization.

Governance and the government: Government, governing and governance. Determinants and indicators of good governance. Citizens charter and other instruments. Decision making processes. Need for openness and transparency. People's participation, collaborative management. Local governance. Panchayati Raj institutions. Development projects undertaken by the PRI.

Governance for urban management: Evolution of development and management systems. Scope of development management at the national, state and local levels. Hierarchy of urban settlements. Institutions and organizations. Stake holders, their perceptions and role in urban management.

Governance and urbanization: Processes of urbanization, developmental conflicts, resource constraints, systems deficiencies. Urban poverty and exclusion from development process. Sustainable development. Impact of globalization and economic reforms. Social diversities. Defects in planning approaches, multiplicity of organizations and authorities.

Governance in Post 73rd and 74th amendment scenario: 73rd and 74th Constitution Amendment Act, including – XI and XII schedule, decentralization of powers and functions. Local and participatory planning, bottom up, decentralized and integrated planning processes. Planning, governance and spatial strategy. Best practices of planning and quality of governance.

PLA 413: Urban Finance

Multiple finance: Nature and composition of income and expenditure, limitations and need for revenue enhancements. Expenditure control methods and mechanisms. Budgetary allocation from central and state governments for urban development. Assistance from

foreign donors and multi- national agencies. Non-traditional sources of funding. Market access. Pool finance and prerequisite conditions for accessing non-traditional funds.

Additional funding sources: Types of partnership approaches. Privatization of civic services. Public private partnership mechanisms. Types of contracts and ownerships. Emerging cost effect technology interventions. User charged projects. Pricing of services.

Resources based on achievement of urban reforms: Role of state government and urban local bodies. City's challenge fund. Urban reforms. Implications on resources, incentive fund and state level pooled finance development fund.

Institutional capacity enhancement: Better finance management, management process. Accounting and budgeting, asset management, receivables management, cost centre approach. Computerization as tool for resource enhancement. Role of management information systems.

Plan forms and indices: Financial operating plan, city corporate plan. Development of urban indicators. Infrastructure pricing and financing, financing mechanisms in addition to tax and grants. private public partnerships like BOT, BOOT, BOLT etc. Impact fee, subsidies.

PLA 431: Infrastructure Planning, Development and Management (Elective – I)

Water urban infrastructure: Concept of basic needs, formulation of objectives, norms and standards, planning for water supply, source of supply, source analysis, quality and quantity, issues related to transmission of water, treatment methods, sequence, benefits. Distribution systems suitable in large city and small town. Basic requirements, design guidelines, technological options for water supply. Aspects of water distribution in far flung areas. Standards and locations for pumping stations. Water supply projects financing and management. Legal rights, water pricing, water pollution.

Sewage and sanitation: Biological/ environmental/ cultural concepts in environmental sanitation. Low cost sanitation options - biogas, *sulabh shauchalaya*, etc. Basic information, alternative disposal systems and conditions of use. Principles of sewage system layout. Collection, transportation and treatment of sewage. Principles of water bound disposal system, storm water drainage systems. Different methods of sewage treatments. Issues related to development parameters. Solid waste - basic principles, generation, characteristics, collection, collection, disposal, management of city waste. Environmental issues of garbage disposal. Alternative technological innovations, conversion of garbage into usable forms.

Fire protection and electricity: Planning for fire protection services and space standards. Locational criteria, implications on land use and density. Planning for electrification, general scenario, services and space standards of transformers. Locational criteria, load forecasting. Institutional arrangements for municipal services, sector issues and assessments, financing systems, administrative set-up, people's participation

Regional infrastructure planning: Regional poverty and basic needs. Basic needs approach to the provision of infrastructure and networks.

Regional infrastructure and network systems: Physical (roads, irrigation system, water supply, sanitation, drainage, watershed management, fire services, telecommunication, energy, electricity, solid waste disposal, etc.). Social health and education. Economics

including banking, marketing and public distribution systems. Diagnosis of issues, methodology and role of regional planner.

Issues in regional infrastructure planning: Planning and programming approaches for regional infrastructure and network systems. Environmental, social and economic impacts of infrastructure and network systems. Integrated planning organization and management of regional infrastructure and network systems. Economic costing of regional networks and services. Pricing and cost recovery for district networks and services.

PLA 432: Rural Development and Management (Elective – I)

Rural development: Meaning, nature and scope of development. Nature of rural society in India. Hierarchy of settlements. Social, economic and ecological constraints for rural development.

Roots of rural development in India: Rural reconstruction and *Sarvodaya* programme before independence. Impact of voluntary effort and Sarvodaya movement on rural development. Constitutional direction, directive principles. Panchayati Raj - beginning of planning and community development. National extension services.

Post-Independence rural development: Balwant Rai Mehta Committee - three tier system of rural local Government. Need and scope for people's participation and Panchayati Raj. Ashok Mehta committee - linkage between Panchayati Raj, participation and rural development. Five Year Plans and rural development. Planning process at national, state, regional and district levels. Planning, development, implementing and monitoring organizations and agencies. Urban and rural interface - integrated approach and local plans. Development initiatives and their convergence. Special component plan and sub-plan for the weaker section. Micro-eco zones. Database for local planning. Need for decentralized planning. Sustainable rural development.

Post 73rd amendment scenario: 73rd Constitution (Amendment) Act - XI schedule, devolution of powers, functions and finance. Panchayati Raj institutions - organizational linkages. Recent changes in rural local planning. Gram sabha - revitalized Panchayati Raj. Institutionalization. Resource mapping, resource mobilization including social mobilization. Information technology and rural planning. Need for further amendments.

Government schemes: Overview of contemporary government schemes for rural development. Rural development schemes plans and policies for sectors of development as agriculture and allied industries, transport, employment, child and women development, rural electrification, etc.

PLA 433: Disaster Risk Mitigation and Management

Basic concepts of disaster management: Disaster - definitions, concept and perceptions. Different types of disasters. Recent initiatives at national and state level. Kyoto framework of disaster mitigation and management. Disaster management policy at national and state levels. Disaster Management Act at national and state levels.

Disaster management mechanisms: Disaster management mechanisms - national, state and district levels. Select global practices. Disaster and development. Physical planning and

disaster management plans. Various role players in disaster management - NGOs / CBOs and armed forces. Community based disaster preparedness (CBDP).

Disaster risk mitigation: Natural disasters - physical phenomenon, causes and consequences mitigation and management practices - cyclones, floods, earthquakes, landslides etc. Causes and risk mitigation strategies at the master plan for industrial, chemical and biological disasters. Land use planning, building bye laws and disaster safe construction practices for different types of disasters.

Disaster preparedness: Forecasting and early warning systems for various types of disasters. Communication and information technology in disaster management. Disaster education and awareness. Documentation and case studies on natural disasters. Urbanization, land requirements, social and affordability issues of land use, climate change and its implications in disaster mitigation.

Post disaster management and cross cutting issues: Post disaster management. Rehabilitation and reconstruction of disaster affected areas. Urban disaster mitigation. Natural resource management for disaster safe habitation. Relationship between disaster and environment. Safe hill area development guidelines and coastal zone regulations for safe habitation. Human settlement planning for consequence mitigation of global warming and climate change through.

PLA 414: Metropolitan Planning, Development and Management

Metropolis and metropolitanization: Introduction to metropolis and related concepts, growth and scale. Complexities - social, economic, physical and administrative. Metropolitanization in India - general trends and distribution. Issues and problems in metropolitan planning and development.

Metropolises and its region: Area of influence, service area of a metropolis. Metropolis as a primate city. Concept of degree of primacy. Metropolitan region and delineation techniques. Metropolitan regional structures: characteristics, components and spatial patterns.

Forms: Metropolitan centralization and decentralization processes. Concepts of ring and satellite towns, counter-magnets. Forms and concepts for metropolitan planning and development - sheet, galaxy, core, star, ring and multi-nucleated. Their merits and demerits. Efficient functioning of metropolis

Metropolitan planning, development and management strategy: Metropolitan planning - spatial planning studies and surveys. Concepts and techniques of preparation of metropolitan city plans. Metropolitan planning, development and management strategies at regional and settlement levels. Tools and constraints in the implementation of metropolitan development plan in terms of administration, legal and financial aspects. Role and function of public participation.

Case studies in metropolitan planning and development: Metropolitan planning, development and management in India. Appraisal of planning and development efforts in case of some of the metropolises, viz. Kolkata, Mumbai, Delhi and Chennai, etc

PLA 415: Training Review*

Students are required to undertake training in a planning organization during summer vacation between the sixth and seventh semester. The period of training will be six weeks. The exact period and place of training will be decided in consultation with the coordinator-in-charge of training. The students are expected to submit a 'Satisfactory' certificate from the relevant Planning Organization after completion of training. The students are expected to work on project/s related to urban planning or any specialization such as infrastructure planning, environmental planning, transportation planning, real estate, housing etc.

The students will submit a report, highlighting the profile of the organization, its structure, key work areas, and an introduction to project(s) currently being undertaken. Thrust of the report would be on specific projects that the student may be part of, describing the background, context, methodology, policy framework and proposals (if any) of the project. The involvement of the student in the organization during training would need to be specified, supported and verified by the supervisor in the organization.

The students would be evaluated on the basis of the report submitted and presented as a seminar at the time of Viva-Voce and the report received from the organization.

PLA 416: Planning Studio – VII*(Regional Plan)

Context of regional plans: Role and relevance of regional planning at district or block level for regional planning, critical appraisal of district or block level plans. Understanding contents of various types of regional plans and their linkages with higher and lower order plans.

Constitutional provisions: District planning in the context of constitution 73rd and 74th amendment acts. District planning and metropolitan planning committees.

Organization of field surveys: Formulation of goals, objectives and methodologies. Identification of data and sources of information. Collection of secondary and primary data for sectoral and spatial planning. Detailed data analysis.

Analysis and synthesis: Identification of development issues, potential thrust areas and constraints: Sectoral and spatial. Designing of alternative planning strategies, settlement patterns and development strategies. Sectoral and spatial prioritization, phasing, financial plans, institutional mechanisms, legislative framework, management plans.

Plan, policies and proposals: Preparation of regional plan document along with drawings, etc. Preparation of policies and proposals with different scenarios and identification of priority areas. Phasing and monitoring. Governance structures for implementation. Regional land utilization plan and the plan document.

PLA 421: Urban Management - II

Decision making: Decision making - definition, features, factors, essentials and hindrances in sound decision making. Structure and types of decisions. Theories of decision making - rational theory, incremental theory, systems theory, game theory, conflict theory. Herbert Simon's contribution in decision making. Decision makers and decision making bodies related to urban and regional planning at national, state and local level.

Leadership: Planner's function as a leader, urban development manager, public bureaucrat, policy analyst and social reformer. Approaches to study leadership - trait approach, behavioral approach and situational approach. Role of the planner in the decision - making process. Generalists vs. specialist.

Communication: Importance of communications - elements, types, features and essentials of effective communications. Hindrances to effective communication. Theories of motivation - carrot and stick approach, need based theory, motivational system. Integration versus disintegration. Co-ordination and co-operation. Centralization and decentralization. Single versus plural supervision. Elements and types of organization, theories of organization - scientific management theory, bureaucratic theory, classis theory, human relations theory. Behavioral approach and systems approach. Political systems, social systems and planning democracy and planning, socialism and planning, fascism and planning. Tribal society, peasant society and industrial society. Spatial segregation in India.

Conflicts and resolutions: Nature and mode of resolution of conflicts. Public participation in planning as an aid to better understanding planning and implementation. Political nature of planning and implementation problems in India. Case studies - examples from the other parts of the world highlighting situations where such problems have been minimized.

PLA 422: Planning Practice -II

Role of planner: Planner's input as professional at various levels and organizations, his role in decision making processes, relevant issues - Generalists vs. specialists, professionals vs. technocrats, planner as decision maker vs. advisor to decision maker, relationship with client, developers, institutions and contractors. Relationship with other experts such as engineers, architects, sociologists, economist, lawyers, etc. for specialized studies related to planning.

Organization, scope and scale of charges: Aims and objectives of professional institutes, sister bodies. Professional roles and responsibilities of planning consultants. Responsibilities towards clients, fellow professionals and general public. Scope of services for different projects like master plan for urban area, zonal district plan, sector/neighborhood, layout for group housing schemes, commercial centers, industrial estates, etc. Consultancy agreements and safeguards. Fees and scales of professional charges.

Political systems, social systems and planning: Democracy and planning, socialism and planning, fascism and planning. Tribal society, peasant society, industrial society and spatial segregation in India.

Conflicts and resolutions: Nature and mode of resolution of conflicts. Public participation in planning as an aid to better understanding planning and implementation. Political nature of planning and implementation problems in India. Case studies - examples from the other parts of the world highlighting situations where such problems have been minimized.

Ethics: Canons of ethics, ethics of virtue, ethics of duty, ethics of responsibility, work ethics, professional ethics, ethics in planning profession, research and education.

PLA 434: Environmental Impact Assessment (Elective – II)

Introduction: Role of Environmental Impact Assessment in the planning and decision making process. Its definition and need, evolution and objectives, tasks and scope.

Methods: Methods of Environmental Impact Assessment. Its advantages and limitations. Case studies from India and abroad on projects of various types covering different levels of planning.

Impacts on land uses and resources: Assessment of impacts on land use at urban and regional level. Assessment of impacts on resources (including air, water, flora and fauna). Case studies from India and abroad on projects of various types covering different levels of planning.

Social and health impacts: Assessment of social and health impacts. Case studies from India and abroad on projects of various types covering different levels of planning.

Environmental impact assessment: Public - private - people's participation in Environmental Impact Assessments - definition and concepts, objectives, techniques, advantages and limitation. PRA techniques. Case studies from India and abroad on projects of various types covering different levels of planning. Practical exercises on Environmental Impact Assessments.

PLA 435: PPP in Urban Environmental Services (Elective – II)

Urban environment: The urban environment, existing attributes and changing scenario. Problems associated with urban environmental services.

Role and trends: Public-Private Partnerships in delivery of urban environmental services. Recent trends of increasing private participation. Possible partners and their possible roles.

Forms of partnerships: Possible forms of partnerships such as contracting out, BOT, joint venture, concessions and community led informal partnership approaches. Strengths and weaknesses of PPP and their funding structures.

Partnerships, alliances and urban environmental services: Preconditions for partnerships. Advantages of collaborating. Making groups and partnerships effective. Methods of promoting participation. Using partnerships for improving urban environmental services in small and medium size cities. Meeting the needs of the urban poor through public-private partnerships.

Mechanisms of PPP: Processes, procedures and mechanisms in partnerships - regulations and administrative procedures, competitive bidding, due diligence technique, regulatory authority. Transaction cost. Use of municipal bonds for raising public investment. Capacity building of municipalities for undertaking partnership efforts.

PLA 436: Ethics in Planning (Elective – II)

Nature of values: The value-crisis in the contemporary Indian society. The nature of values, the value spectrum for a good life. The Indian system of values.

Values and science and technology: Material development and its values. The challenge of science and technology. Values in planning profession, research and education.

Types of values: Psychological values - integrated personality, mental health. Societal values - the modern search for a good society, justice, democracy, rule of law, values in the Indian constitution. Aesthetic values - perception and enjoyment of beauty. Moral and ethical values and nature of moral judgment. Spiritual values, different concepts and secular spirituality. Relative and absolute values. Human values - humanism and human values, human rights, human values as freedom, creativity, love and wisdom.

Ethics: Canons of ethics, ethics of virtue, ethics of duty, ethics of responsibility. Work ethics and professional ethics. Ethics in planning profession, research and education.

Values and managements: Management by values - professional excellence, inter-personal relationships at work place, leadership and team building, conflict resolution and stress management, management of power.

PLA 423: General proficiency*

General Proficiency is meant for developing co-curricular activities in individual student. By this they are encouraged to participate in NOSPLAN, NSS, NCC, Debates, Dramas, Paper presentations, Sports and Games etc. at various levels.

PLA 424: Planning Thesis*

The students are required to undertake a thesis on a topic of their choice. Thesis project should essentially culminate in a spatial planning solution in addition to social, economic and strategic inputs.

Development of methodology: Clear goals and objectives along with scope of each objective should be outlined before establishing the need for conducting a research study. Substantive limitations of the research work should also be stated.

Literature search: Previous published work on the subject area has to be critically examined for finding out existing thought processes of other authors and trends.

Primary / secondary data collection: Depending on the research topic, field surveys have to be designed and field work has to be done after conducting appropriate sample surveys.

Synthesis of data and information and findings: Field data and information and literature search findings should be synthesized to make final arguments and identification of planning issues.

Proposals and recommendations: Final specific planning proposals and recommendations should be made at various geographical levels. Proposals should directly emanate from analysis and should not be generalized. Thesis should contain a list of references as per international standards.

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