

**College of Engineering, Pune**  
(An Autonomous Institute of Govt. of Maharashtra, Permanently Affiliated to S.P. Pune University)

**Department of Civil Engineering**

**Curriculum Structure & Detailed Syllabus (UG Program)**

**Second Year B. Planning.**  
(Revision: A.Y. 2018-19, Effective from: A.Y. 2018-19)

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## **Program Education Objectives (PEOs):**

The Graduates will be able to:

- I. Have successful career in the diversified sectors of the Planning profession by acquiring knowledge in mathematics, science, and planning fundamentals.
- II. Analyze societal complex problems to meet specified needs considering cultural, societal, and environmental aspects.
- III. Exhibit professionalism as a member and/or leader in a team by adapting appropriate planning techniques and inculcating lifelong learning.
- IV. Attain professional as well as administrative proficiency in the diversified sectors of the planning profession with sense of ethics, integrity and social responsibility.

## **Program Specific Outcomes (PSOs):**

- i. Analyze and solve specific problems relevant to physical planning by applying the knowledge of basic sciences, fundamentals of statistics.
- ii. Apply the contextual knowledge of town and country planning to assess societal, environmental, health, safety, legal and cultural issues with professional ethics and function effectively as an individual or a leader in a team to manage different projects in multidisciplinary environments as the process of life-long learning.

## **Program Outcomes (POs):**

On successful completion Graduates will be able to:

- a. Apply the knowledge of mathematics, science, and planning fundamentals to the solution of complex problems.
- b. Identify, formulate, research literature and solve complex planning problems.
- c. Design processes that meet the specified needs considering cultural, societal, and environmental aspects.
- d. Conduct surveys, analyze and synthesize the information to provide conclusions.
- e. Use appropriate planning techniques, tools and software to analyze planning problems with understanding of limitations.
- f. Apply informed reasoning to assess societal, health, safety, legal and cultural issues relevant to professional planning practice.

- g. Assess local and global impacts of societal issues on planning.
- h. Demonstrate professional and ethical responsibilities.
- i. Function effectively as an individual, or leader in diverse teams of multidisciplinary settings.
- j. Communicate effectively in both verbal, graphical and written forms.
- k. Apply Planning and Management principles as a member and /or leader in a team to manage projects.
- l. Adapt and transform society by understanding the need of independent and lifelong learning.

### Correlation between the PEOs and the POs

<b>PO→ PEO,PSO↓</b>	<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>E</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>
<b>I</b>	✓	✓		✓							✓	
<b>II</b>			✓	✓		✓	✓					
<b>III</b>		✓						✓	✓		✓	✓
<b>IV</b>			✓				✓	✓	✓	✓	✓	✓
<b>i</b>	✓	✓		✓		✓						
<b>ii</b>		✓	✓	✓		✓	✓	✓	✓		✓	✓

**PSO (from 2019)**

## List of Abbreviations

<b>Sr. No.</b>	<b>Abbreviation</b>	<b>Stands for:</b>
<b>1.</b>	<b>PCC</b>	<b>Program Core Course</b>
<b>2.</b>	<b>LC</b>	<b>Laboratory Course</b>
<b>3.</b>	<b>HSMC</b>	<b>Humanities/Social Sciences/Management Course</b>
<b>4.</b>	<b>MLC</b>	<b>Mandatory Learning Course</b>
<b>5.</b>	<b>SBC</b>	<b>Skill Based Course</b>
<b>6.</b>	<b>OEC</b>	<b>Open Elective Course</b>

## CURRICULUM STRUCTURE OF S.Y B.Planning

Effective from A. Y. 2018-19

### III-Semester:

Sr. No	Course Type/Code	Subject Title	Contact Hours			Credits
			L	T	P	
01	PCC1	Planning Theory – I	3	-	--	3
02	PCC2	Planning Techniques – II	3	--	--	3
03	PCC3	Traffic and Transportation Planning – I	3	--	--	3
04	PCC4	Urban Design and Landscape Planning	3	--	--	3
05	PCC5	Urban Sociology and Geography	3	--	--	3
06	PCC6	Building Estimations and Valuation	3	--	--	3
07	LC4	Planning and Design Studio – III (Neighborhood and Site Planning)	--	--	10	4
<b>Total</b>			<b>18</b>	<b>0</b>	<b>10</b>	<b>22</b>

### IV-Semester:

Sr. No	Course Type/Code	Subject Title	Contact Hours			Credits
			L	T	P	
01	PCC1	Planning Theory – II	3	--	--	3
02	PCC2	Traffic and Transportation Planning – II	3	--	--	3
03	PCC3	Ecology and Resource Management	3	--	--	3
04	PCC4	Housing	3	--	--	3
05	SBC1	Geo-Informatics – I	2	--	2	3
06	LC5	Planning and Design Studio – IV (Traffic and Transportation Planning)	--	--	10	4
07	MLC	Professional Laws, Ethics and Values	1	--	0	0
08	HSMC	Innovation and Creativity	1	--	0	1
<b>Total</b>			<b>16</b>	<b>0</b>	<b>12</b>	<b>20</b>

## **(PCC1) ( PL-20001 ) Planning Theory – I**

### **Teaching Scheme**

Lectures : 3 hrs/week

### **Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

### **Course Outcomes:**

CO1: Explain the theory – practice gap

Co2: Comprehend the changes in theory in response to changing contexts

Co3: Map the evolution of planning theories

Co4: List the salient features of city as an organism, as a physical entity, as a political entity etc.

Co5: List the methods of community participation and advocacy planning

### **Unit 1: Defining Planning Theory**

**(6Hrs)**

Ontology and epistemology of planning theory; Planning theory: definition and typology; The theory-practice gap; Role of Theory in urban studies

### **Unit 2 : Evolution of Planning Theories**

**(6Hrs)**

Paradigm shifts in Planning theory with time and context; Land use theories of urban structure; Transition to socially based theories and urban ecology- Chicago School; Neo liberalism and planning; Technology and planning; Pluralism and advocacy planning; Postmodern planning; Collaborative planning- communicative rationality; Planning as a communicative process

### **Unit 3: Basis of Classical theories**

**(6Hrs)**

Economic determinants of land use; Social determinants of land use; City as an organism; Urban planning in response to political ideologies - socialist planning , capitalist planning and mixed economy planning responses

### **Unit 4: Classical & Contemporary Planning Theories**

**(6Hrs)**

An overview of contemporary theories on urban planning (William Alonso, David Harvey, Herbert Simon, Paul Davidoff, Christopher Alexander, Jane Jacobs, Alan Turner, Peter Calthrope, Saskia Sassen, Manuel Castells, Ananya Roy); City as a tree, right to city, global city, network city, systems approach etc(This unit shall be supplemented under Planning Colloquium and Seminar BPLN 0604)

### **Unit 5: Community Participation and Planning**

**(6Hrs)**

Participatory planning: history and significance, methods of participation; Institutional arrangement for public participation

### **Reference Books:**

1. Planning theory by A. Faludi. Pregamon Press, Oxford
2. A ladder of Public Participation by S. Arnstein. JAIP
3. Compact cities:sustainable urban forms for developing countries by M.Jenks and R. Burgers

4. Urban Geography-A global perspective by M. Pacione. Routledge London
5. Urban Planning theory since 1945 by N. Taylor, Sage publications, London

## **(PCC2) ( PL-20002 ) Planning Techniques – II**

### **Teaching Scheme**

Lectures : 3 hrs/week

### **Examination Scheme**

T1 and T2 - 20 Marks each

End - Sem Exam – 60 Marks

### **Course Outcomes:**

CO1: Acquire the knowledge of evolution of transport system.

CO2: Determine road capacity of urban roads

CO3: Identify traffic stream characteristics and traffic survey studies

CO4: Analyze & design geometric design of urban roads.

CO5: Understand the traffic management and control measures of transport system

### **Unit: 1: Methods of Analysis**

**(6 Hrs)**

Methods of analysis of Socio-Economic and Physical data using various statistical tools like Mean, Mode, Median, Standard deviation, Correlation and regression; Location Quotient and its usefulness in Regional Planning, examples; Coefficient of Localization and its impact on land prices and economic growth of a city; Locational attributes of various land uses and population, retail location and industrial location analysis; Types of Urban Structures and Urban Growth-Hierarchy of urban Structure, Translocation; Techniques for understanding structure of urban areas, Factors responsible for land values and various density patterns in urban area;

### **Unit 2: Spatial Standards**

**(6 Hrs)**

Methods and Approach for Formulating of spatial standards for various land uses like recreation areas, education facilities, Industrial performance standards, space standards for facility areas, utilities and networks; Performance standards for various infrastructure facilitates; Case studies

### **Unit 3: Regional Planning**

**(8 Hrs)**

Concept and need for Regional Planning, Definition of Planning regions, Formal and Functional Region, Fact or Fallacy; Hierarchy of Planning regions; Methods of Delineation of formal regions and functional regions- Flow Analysis, Gravitational Analysis; Case Studies- National Capital Region, Mumbai Metropolitan region; Factor analysis, Cluster analysis

**Unit 4: Plan Preparation Techniques****(8Hrs)**

Method of Setting of Vision, Goals and Objectives of any development plan; Various Methodologies adopted for preparation of urban/ regional development plans, master plans, structure plan; Implementation of plans in urban area; public participation and plan implementation; various techniques of urban renewal and central area redevelopment; Contents of a Master Plan, Regional Plan

**Unit: 5 Introduction to Advanced Techniques****(8 Hrs)**

Thresholds analysis- Concept of thresholds and threshold costs, Classification of thresholds, Methods of threshold Analysis, Simulation and Population projection techniques-Arithmetic, Geometric, Linear, incremental, ratio etc.; Migration Models- Ravenstein's Laws Of Migration, Newton's Gravity Model, Zelinsky's Model Of Mobility Transition, Clark's Model Of Migration Decision, Lee's Intervening Obstacles Model, Stouffer's Law Of Intervening Opportunities, Application in Planning; Linear programming- Basic theorems, Duality theorem- Application in Planning.

**Reference Books:**

1. Reading Material on Planning techniques- Prof J.H Ansari and Shri Mahavir. Institute of Town Planners India
2. An Introduction to Regional Planning- Concept, Planning and Practice. J. Glasson. Taylor and Francis
3. Forecasting techniques for Urban Planning. B.G. Field and B.D. Mac Gregor. UCL Press London 1992
4. Threshold Analysis-An Economic Tool for Town and Regional Planning. J.T. Hughes and J. Kozlowski
5. Spatial Interaction Modeling: A Regional Science Context. John R. Roy. Springer Publisher

**(PCC3) ( PL-20003 ) Traffic and Transportation Planning – I****Teaching Scheme**

Lectures : 3 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

**Course Outcomes:**

- CO1: Acquire the knowledge of evolution of transport system.  
CO2: Determine road capacity of urban roads  
CO3: Identify traffic stream characteristics and traffic survey studies  
CO4: Analyze & design geometric design of urban roads.  
CO5: Understand the traffic management and control measures of transport system

**Unit 1: Transport System and its Development****(6 Hrs)**

Evolution of Transport system, Role and importance of transport, characteristics



in various forms of transport systems - road, rail, air, water; evolution of mass transport development in India, urbanization and transport demand, motorization trends

**Unit 2: Road Capacity**

**(6 Hrs)**

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, capacity at intersections.

**Unit 3: Traffic Survey and Studies**

**(8 Hrs)**

Road and network inventory, Traffic Volume Count, origin destination survey, speed and delay study, parking surveys, pedestrian survey, public transport survey, Intermediate transport survey, design of survey proforma, methods of conducting surveys, analysis and interpretation

**Unit 4: Transport Facility Design**

**(8 Hrs)**

Road: hierarchy, design control and criteria, geometric design elements, sight distance and control of access; Intersection: hierarchy of intersections, Parking: Parking space norms and standards, design standards for on-street and off-street parking facilities. Pedestrian Facilities: Capacity guidelines for at-grade and grade separated pedestrian facilities, design considerations. Cycling Facilities: Capacity guidelines and design considerations for cycle tracks Public Transport / Para Transit Facilities: Design standards for bus stops, auto rickshaw, taxi, cycle-rickshaw stands

**Unit 5: Traffic Management and Control**

**(8 Hrs)**

Traffic Management measures; Arterial Management; Traffic Signs - principles, types and design considerations, road markings; Traffic Signals - types, optimal cycle length and signal settings, warrants; Regulation of Traffic - speed regulation, regulation of vehicle, parking regulations.

**Reference Books:**

1. L. R. Kadiyali, Traffic Engineering and Transport Planning
2. US Highway capacity Manual
3. IRC guidelines
4. C. Buchanan, Traffic and design
5. M. Taylor, W. Young, bansal, Understanding Traffic systems
6. Home Gurger, Transport Engg. Handbook

## **(PCC4) ( PL-20004 ) Urban Design and Landscape Planning**

### **Teaching Scheme**

Lectures : 3 hrs/week

### **Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

### **Course Outcomes:**

CO1: Evaluate the built environment in an urban setting

CO2: Conceptualize and contextualize the urban design imperatives

CO3: List the urban design parameters for specific places

CO4: Propose design interventions for shaping public realm

CO5: Evaluate and assess spatial issues pertaining to landscape planning

CO6: Propose realistic design interventions using landscape as a tool to mitigate the urban flood issues

### **Unit: 1 Introduction to Urban Design and Landscape Planning (6Hrs)**

Definition of urban design and landscape planning; Urban design and landscape planning as interface between architecture and planning; Basic principles of landscape planning; An overview of manmade landscapes in city morphology.

### **Unit: 2 Elements of Urban Design (6Hrs)**

Understanding urban form through its elements; Similarity in elements of urban design and landscape for organization of spaces; Image of the city and its components; Urban transportation vis a vis urban design; Importance of landscape features in urban design

### **Unit: 3 Morphology of Urban Forms and Urban Design Guidelines (6Hrs)**

City as a three dimensional entity; Activity and the morphology of places; Tangible and intangible aspects of city design; Universal values of urban design; An overview of urban design theories; Public realm of cities; Urban form determinants; Urban design and its control; Case studies of urban design

### **Unit 4: Landscape Planning: Scale and Design (6Hrs)**

Landscape at urban and regional level; Components and characteristics of open space patterns in towns and cities; Landscape design in relation to land- use, circulation networks and activity; Concepts of ecosystem services

### **Unit 5: Landscape Planning Methods, Processes and Sustainable Practices (6Hrs)**

Landscape planning: methods and processes; Site analysis with all its attributes; Method of analysis; Relevance of plants types, vegetation with respect to indigenouness; Modifying microclimate of a site through landscape design; Techniques of sustainable landscape planning

**Reference Books:**

1. The landscape of man: shaping the environment from prehistory to the present day - Geoffrey Alan Jellicoe, Susan Jellicoe
2. Landscape Planning: Environmental Applications - William M. Marsh.
3. Landscape Architecture: A Manual of Site Planning and design - John O. Simonds
4. Landscape Ecology Principles in Landscape Architecture and Land-Use Planning - Wenche E Dramstad, David M. Gillilan, James D. Olson
5. Basic elements of landscape architectural design - Norman K. Booth

**(PCC5)( PL-20005 ) Urban Sociology and Geography****Teaching Scheme**

Lectures : 3 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

**Course Outcomes:**

CO1: Describe the need and values of Sociology for self and community.

CO2: Determine the need of Community Development in order to appreciate the concept of gender diversity, related issues and development from an ethical and Sociological viewpoint.

CO3: Perform and act with social responsibility at the personal, professional and planning levels for Community Development.

CO4: Apply sociological human values in competence to professional ethics, gender development gender implications on spatial planning.

**Unit 1: Understanding Sociology****(4 Hrs)**

Sociology as a science; Sociological imagination and rethinking; Applied sociology

**Unit 2: Sociological Perspective and Organizing Social Life****(6 Hrs)**

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

**Unit 3: Social Institutions****(6 Hrs)**

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)

**Unit 4: Community Development****(8 Hrs)**

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; Report writing

**Unit 5: Gender and Development****(6 Hrs)**

Gender and sex; Gender Sensitivity; Gender and development planning; Gender implications on spatial planning

**Reference Books:**

1. Sociology, understanding and changing the social world by Steve Barken. Flat world knowledge, 2010
2. Introduction to sociology by R Cragun and Deborah Cragun
3. Sociology by T.K. Ommenabd C.N. Venugopal
4. Basic concepts in Sociology by D.P. Mukerji. Rupa Publications, 2004
5. Addressing Gender Concerns in India's Urban Renewal Mission by Renu Khosla. UNDP 2010

**(PCC6) ( PL-20007 ) Building Estimation & Valuation****Teaching Scheme**

Lectures : 3 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

**Course Outcomes:**

- CO1: Student will gain adequate knowledge to write the specifications for a given item of work.
- CO2: Students will be able to work out the unit cost of individual items based on their specifications and arrive at the overall cost of the project through determining the detailed specifications.
- CO3: Students will be able to apply different types of estimates in different situations and carry out analysis of cost estimation at different locations.
- CO4: Students will be able to apply different types of valuation in different situations and carry out analysis of valuation at different locations.
- CO5: Students will be able to understand, evaluate and prepare detailed project report with specifications, estimations and valuation.

**Unit 1: Introduction****(4Hrs)**

Why the knowledge of quantity surveying and specifications is necessary for planners? Significance and methods of 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

**Unit 2: General Specifications****(6Hrs)**

General specifications for common building materials and building trades, earthwork, structure (framing), flooring, stonework, plasters, waterproofing of basements and terraces, roofing, doors and windows, elevators

**Unit 3: Detailed Specifications****(8Hrs)**

Site development and earth works; Water supply network and distribution systems; Sewer systems; Electrical and telephone networks; Landscaping, roads, pathways, boundary wall, pools, lighting

**Unit 4: Estimation****(6Hrs)**

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 of a Planning Schemes for an approximate population of 5,000 as per Norms and standards

**Unit 5: Valuation****(6Hrs)**

Value and purpose of valuation; Definition and importance of valuation of land and buildings; Factors affecting property and land value at a city and clarity level; Legal, fiscal and administrative measures of land value; Betterment; Scrap value, salvage value, outgoings; Capitalized value of buildings; appreciation, methods of calculating depreciation

**Reference Books:**

1. Estimation and costing and evaluation by B.N. Dutta. Sangam Books
2. Specification: A practical system of writing specifications. Hand press publishing 2012
3. Estimation, costing, specification in civil engineering by M. Chakraborti, 2010

## **(LC4) Planning and Design Studio - III (Neighborhood and Site Planning)**

### **Teaching Scheme**

Lectures : 10 hrs/week

### **Examination Scheme**

T1 and T2 - 20 Marks each

End - Sem Exam – 60 Marks

### **Course Outcomes:**

CO1: Students will learn to prepare neighborhood level maps, working drawings of apartment units (less than Scale 1: 2500)

CO2: Students will learn to perform physical feasibility analysis at site level and financial feasibility of whole project

CO3: Students will learn to develop various concepts with respect to designing of site at neighborhood and township level

CO4 :Students will learn to contextualize and plan for the assigned site considering the locational advantages, human activities and regulations.

### **Unit 1: Designing, Preparation and Presentation of Drawings**

Design and preparation of plan, sections and elevation of low rise and high rise apartment's taking into account the building byelaws and zoning regulations; Preparation of presentation drawings;

### **Unit 2: Planning Working Drawings**

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

### **Unit 3: Site Analysis and Conceptual Approach to Site Planning**

Site analysis, development standards and preparation of the design brief; various considerations for site layout, conceptual approach to site planning;

### **Unit 4: Layouts and Area Analysis**

Preparation of preliminary layout and area analysis; Final layout showing the circulation and basic infrastructure;

### **Unit 5: Costing and Preparation of Model**

Rough costing of the scheme, and preparation of the model to an appropriate scale

## Suggested Assignments

<b>Assignment 1</b>	<b>Literature Review</b>
	The purpose of this assignment is to provide the students with an understanding of the theoretical basis for this studio. This objective is pursued through the examination of the principles underlying the design of relevant components of site planning. It is then developed through case studies that illustrate the application of these principles.
<b>Assignment 2</b>	<b>Neighborhood Plan</b>
	This is a preliminary exercise that aims at understanding basic design elements and most importantly calculating amenities, housing units with respect to population and area. Approx 5 acre site was given for this exercise in which students calculated FSI, population, amenities from URDPFI guidelines
<b>Assignment 3</b>	<b>Base Map Preparation</b>
	Physiographic features, built form, infrastructure and utilities systems of the sub-zone, surrounding area and the site itself. Determine morphology of the area, socio-economic structure and growth trends. Summarize characteristics of the site and the opportunities and constraints for its development. Prepare design guidelines.
<b>Assignment 4</b>	<b>Concept Plan</b>
	Present interested concepts related to town ship design. Prepare a design brief: Target population and housing types, and numbers of units. List type and number of facilities required in the overall site and their area requirements.
<b>Assignment 5</b>	<b>Master Plan</b>
	Develop master plan of the given site in 2000-25000 scale, along with this present site context; unite design details in 50-200 scale. Present final calculations. Along with the master plan neighborhood site design into suitable detail at pocket level layout in 1:500 scale. Give plans, elevations and key sections as relevant. Node details/group housing plot detail to be developed if applicable.
<b>Assignment 6</b>	<b>Landscape Plan</b>
	Present landscape plan at master plan level and neighborhood site level. Show typologies of gardens, open spaces, on the suitable scale
<b>Assignment 7</b>	<b>Utilities and Services</b>
	Present hierarchies of water supply, sewerage, and drainage line network on master plan and neighborhood site plan level. Along with this present electric substation, STP, WTP location in master plan. Present proposals for SWM plan
<b>Assignment 8</b>	<b>Costing</b>
	Costing of entire site as per CPWD 2014 or DSR 14 norms and standards. Presented profitability of entire project through NPV and IRR calculations
<b>Assignment 9</b>	<b>Model</b>
	Site Model

## Reference Books:

1. Site Planning by Brooks
2. Planting Design - Brian Hackett
3. Landscape Architecture: A Manual of Site Planning and Design - J.O. Simonds
4. Town & Townscape, McCluskey
5. Design for Living, Bawa&Fernandes
6. Neighborhood Planning, J. Kostka
7. A Guide to Site and Environmental Planning - Harvey M. Rubenstein
8. Forms and Arrangements of Urban Open Spaces; Design with Landforms, Water, Plants and other Outdoor Elements, design and climate
9. Basic Elements of Landscape Architectural Design - Norman K. Booth
10. Trees for Landscaping - School of Planning and Architecture New Delhi
11. Design with Climate – Victor Olgav
12. Site Planning Standards – J. De Chira
13. UDPFI- Guidelines
14. CGWB, 2000, Guide on Artificial Recharge to Ground Water, Ministry of Water Resources, May 2000.
15. Centre for Science and Environment: Rain Water Harvesting Manual
16. CPHEEO (1980), Manual on water supply and Treatment, Ministry of Works and Housing, New Delhi
17. Civil Engineers Handbook. P.N. Khanna
18. Fair G.M., and Geyer J.C. and Morriss, 1956, Water supply and Waste water Disposal. John Wiley and Sons.
19. Site Planning for Solar Access: A Guidebook for Residential Developers and Site Planners - Duncan Earley, Martin Jaffe, Martin Jaffe.
20. Landscape Planning for Energy Conservation - Gary O. Robinette



## Semester IV

### (PCC1) Planning Theory - II

#### Teaching Scheme

Lectures : 3 hrs/week

#### Examination Scheme

T1 and T2 - 20 Marks each

End - Sem Exam – 60 Marks

#### Course Outcomes:

CO1: Students will be able to understand Scientific Rationalism and Planning.

CO2: Students will be able to differentiate Advocacy Planning, Pluralism and Equity Planning.

CO3: Students will be able to realize Political Economy Theories and the City

CO4: Students will be able to understand Collaborative and Communicative Planning

CO5: Students will be able to understand Capabilities, Race, Gender, Religion and Caste

#### Unit 1: Scientific Rationalism and Planning

(7Hrs)

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

#### Unit 2: Advocacy Planning, Pluralism and Equity Planning

(7Hrs)

Meaning, historical background and purposes of Advocacy Planning Model; 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

#### Unit 3: Political Economy Theories and the City

(7Hrs)

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

#### Unit 4: Collaborative and Communicative Planning

(7Hrs)

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

## **Unit 5: Capabilities, Race, Gender, Religion and Caste**

**(7Hrs)**

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

### **Reference Books:**

1. Allmendinger, P. Planning Theory Second Palgrave Macmillan, London.
2. Finche, R. and Planning for Diversity First Palgrave Macmillan, London. Iveson, K.
3. Fainstein, S.S. and Campbell, S. (eds.) Readings in Planning Theory Second Blackwell, London.
4. Brooks, M.P. Planning Theory for -- American Planning Practitioners Association, Washington
5. Taylor Nigel, Planning Theory since 1945, SAGE Publications, London

## **(PCC2) Traffic and Transportation Planning – II**

### **Teaching Scheme**

Lectures : 3 hrs/week

### **Examination Scheme**

T1 and T2 - 20 Marks each

End - Sem Exam – 60 Marks

### **Course Outcomes:**

CO1: Understand the basics of transport travel demand with urban form and urban structure.

CO2: Acquire the knowledge of components of comprehensive transport planning

CO3: Gain the knowledge of specification and standards of transport system components

CO4: Appreciate concept of economic appraisal in transport projects.

CO5: Understand the role of transport policies.

**Unit 1: Urban Structure and Transport System****(8Hrs)**

Types of Urban Form and Structure, Impact of urban form and structure on transport system development, urban structure and mobility levels, concept of accessibility, land use - Transport Cycle, Transit Oriented Development (TOD), Case Studies.

**Unit 2: Comprehensive Transport Planning****(10 Hrs)**

Study area definitions, surveys and studies, survey techniques; and transport planning process – trip generation, trip distribution, modal split, trip assignment; land use transport models, Comprehensive Mobility Plan (CMP) Components, Case studies.

**Unit 3: Transport and Environment****(6 Hrs)**

Traffic noise, air pollution - factors affecting, abatement measures, 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 type - standards and design considerations.

**Unit 4: Economic Evaluation****(6 Hrs)**

Economic appraisal of transport projects, techniques for estimating direct and indirect road user costs and benefits and value of travel time. Transport Project feasibility project Case studies.

**Unit 5: Transport Policy and Management****(6 Hrs)**

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 environment implications in transport; existing organizational and legal framework, transport co-ordination; Transport System Management (TSM) Plans

**Reference Books:**

1. L. R Kadiyali, traffic engineering and transport planning
2. M. Bruton, Introduction of transport planning
3. Salter, Analytical Transport Planning
4. OECD, Better Towns with less traffic

**(PCC3) Ecology and Resource Management****Teaching Scheme**

Lectures : 3 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each

**Course Outcome:**

CO1: Understand the natural environment and its relationship with human activities

CO2: Characterize and analyze human impacts on the environment and ways of addressing them.

CO3: Understand the global and national policies on environment

CO4: Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.

CO5: Understand the role of government body and public participation in protecting the environment

**Unit 1: Introduction**

**(6Hrs)**

Meaning and scope of ecology; evolution of ecology; man, environment and ecosystem; components of nature and basic concepts and processes of ecology; flow of material water energy, invasion, succession, predation, regulatory forces, adaptation, tropic levels, food chain, food web, ecological pyramids; Environmental zones

**Unit 2: Ecosystem and its Relevance to Environment**

**(6Hrs)**

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; development and management

**Unit 3: Environmental Policies**

**(8Hrs)**

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

**Unit 4: Quantitative Ecology**

**(8Hrs)**

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

## **Unit 5: Environmental Impact Studies**

**(8Hrs)**

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.

### **Reference Books:**

1. Environment and Ecology – R. K. Agrawal
2. The Planner's Guide to Natural Resource Conservation: The Science of Land Development - Adrian X. Esparza, Guy Mcpherson
3. Environmental Studies – Dr. J.P. Sharma
4. Ecology, Environment and resource Conservation - J S Singh, S P Singh, S R Gupta

## **(PCC4) Housing**

### **Teaching Scheme**

Lectures : 3 hrs/week

### **Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

### **Course Outcomes:**

CO1: Learn basics of housing, Significance of housing in National Development Goals and current issues in housing.

CO2: Learn housing assessment and various types of housing data in various sources.

CO3: Learn housing development process, slums and related issues.

CO4: Learn housing standards and design, factors determining residential densities; Densities, costs and development control regulations

CO5: Evaluation of Housing Policy and programs in India and housing for various income groups.

### **Unit 1: Introduction**

**(8 Hrs)**

Significance of housing in National Development Goals; Equity and efficiency parameters of housing; Current issues in housing

### **Unit 2: Assessing Housing**

**(6 Hrs)**

Existing Housing Statistics; definitions; 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.

**Unit 3: Housing Development Process**

**(6 Hrs)**

Understanding of factors affecting residential location, theoretical knowledge of ecological, neoclassical, 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, co-operatives

**Unit 4: Housing Standards and Design**

**(6 Hrs)**

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

**Unit 5: Housing Policy Analyses**

**(8 Hrs)**

Understanding and evaluation of Housing Policy and programs in India; five year plans, Central government policy; Policy framework for urban and rural housing; Comparative policy analysis; Housing for the low income groups; Co-operative housing, objectives and principles; management and financing of housing projects; investment in housing in public and private sectors.

**Reference Books:**

1. Phil Heywood Community Planning 2011 Weley – Blackwell
2. Integrating Social and Physical Environment
3. GoI National Housing and Habitat 2007 Government of India Policy
4. Lall V.D. Assessment of Housing Need 1996 Society for Dev. Studies, New Delhi
5. Aldrich B.C. and Housing in Asia Problems and 1990 Rawat Publication. Sandhu R.S. Perspective

**(SBCI) Geo-Informatics – I**

**Teaching Scheme**

Lectures : 2 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

**Course Outcomes:**

CO1: Understand basics of remote sensing in practical sense.

CO2: Visual interpretations of aerial imagery.

CO3: Analysis base for big data acquired from remote sensing and planning sources.

CO4: Computational interpretation of aerial imagery.

CO5: Data handling systems information in India.

**Unit 1: Remote Sensing****(2 Hrs)**

Limitations of Traditional Surveys for Planning; Remote Sensing - Definition, Aerial and Satellite Remote Sensing, Aerial Remote Sensing.

**Unit 2: Photo Interpretation****(4 Hrs)**

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.

**Unit 3: Planning Information Systems****(4 Hrs)**

Systems Approach to Planning as basis for Planning Information Systems; Systems, Hierarchy, Types; Data and Information, Value of Information, Information Flows, Loops; Information Security and Sharing; Information Systems, Types, Limitations.

**Unit 4: Image analysis and software applications****(12 Hrs)**

ERDAS Imagine software and its applications in planning, Image Acquisition-BHUVAN, USGS and concerned software applications (QGIS). Project based informatics typology and analysis methods for; Asset management (Land use Land cover), Property appraisal (Change detection), Vegetation indexing (NDVI feature extraction, mangroves wetland- loss and encroachment), Disaster Mapping (Mapping flood extent areas and disaster impact zones), Mining operations (Pinpoint the location of potential mineral outcroppings through remote sensing. Monitor active or inactive mines and understand broad environmental impacts.

**(3 Hrs)****Unit 5: 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, Introduction to GIS. GIS based master planning

**Reference Books:**

1. Bhatta, B. (3 Nov 2011). Remote Sensing and GIS (ISBN 019569239X, 9780195692396 ed.). University of Minnesota: Oxford University Press, 2008.
2. Reddy, M. A. (2001). Textbook of Remote Sensing and Geographical Information Systems (ISBN 8178000210, 9788178000213 ed.). BSP BS Publication.

3. HarsanKarimi (Ed.) (2009) Handbook of Research on Urban Informatics: The Practice and Promise of the Real-Time City. Information Science Reference, IGI Global, Hershey, Pa.
4. M. S. Nathawat, A. C. Pandey (Eds.) (2008) Geoinformatics for Decentralized Planning and Governance (ISBN: 813160117X), Rawat Publications

**(LC5) Planning and Design Studio - IV (Traffic and Transportation Planning)**  
**Teaching Scheme**

Lectures : 10 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each  
 End - Sem Exam – 60 Marks

This lab provides practical experience on various aspects of Traffic and Transport Planning including various transport surveys, abutting land-use survey on Real Life Projects.

**Course Outcomes:**

CO1: Familiarize basic understanding of transport supply, demand and infrastructure performance through live project.

CO2: Empower students, formulation of issues from traffic data analysis.

CO3: Students will be able to understand travel behavior and transport network by evaluating schemes and conducting transport surveys

CO4: Acquire skills which would contribute in preparation of traffic management plan, area circulation plan, parking management plan, Comprehensive Mobility Plan etc.

**Unit 1: Transport Infrastructure Supply Assessment: (2weeks)**

Understand the road cross-sectional elements roads and their relation with abutting land-use and effect of encroachment of transport supply infrastructure, Street furniture, road markings, road signage, functional and geometrical/physical classifications of urban roads and their cross- sectional elements. Junction hierarchy

**Unit 2: Transport Infrastructure Demand Assessment: (4weeks)**

Carryout the Traffic volume count, Household and Roadside origin –Destination survey, parking surveys, Public transport survey. Pedestrian survey.

**Unit 3: Transport Infrastructure Quality Assessment: (2weeks)**

Carryout the speed & delay survey, signalized intersection survey, surveys of different road user (NMT, public Transport, Private mode users).

**Unit 4: Gap and Issues Identifications (2weeks)**

Through Transport infrastructure supply, demand, and quality assessment, Issues will be identified for all transport infrastructure users like Non-mortised, Public transport and private users



### **Unit 5: Short Term -Traffic Management Plan**

**(2weeks)**

Based on Identified Users Issues, Traffic management plan will prepare for case study area, which will includes, geometric redesign, circulation pattern, parking management schemes, new signal phasing for junctions etc.

#### **Reference Books:**

1. Development Plan of Case study area,
2. National Urban Transport Policy
3. L. R Kadiyali, traffic and transport engineering
4. Pune Street design guidelines
5. Indian Road Congress,
6. S.K. Khanna, Highway Engineering
7. Subhash C. Saxena, Traffic planning and designing

### **(MLC) Professional Laws, Ethics and Values**

#### **Teaching Scheme**

Lectures : 1 hrs/week

#### **Examination Scheme**

Total -100 Marks Continuous  
evaluation-Assignments /  
Presentations/Tests

#### **Course Outcomes:**

CO1 : Student will be able to grasp the meaning of the concept –Law

CO2 : Student will be able to get an overview of the laws relating to Engineers

CO3 : Student will be able to apprehend the importance of being a law abiding person

CO4 : Student will be able to self-explore by using different techniques to live in harmony at various levels

CO5 : Student will be able to analyze themselves and understand their position with respect to the moral and ethical character needed for a successful and satisfactory work life

#### **Unit 1 - Concept of Law**

**(02hrs)**

Understanding Essentials of a Valid Contract and the basics of contract law protecting rights and obligations

#### **Unit 2 - Law of Torts**

**(03hrs)**

Introduction to the Law of Torts and the basics to protect oneself and the company

Law affecting the Workplace

Employers Responsibilities / Duties

Hiring Practices

Introduction to Intellectual Property Law

**Unit 3 - Professional Code of Conduct for Engineers (01hr)**

Relationship between Law and Ethics

Unit 4 Self Awareness Understanding oneself and others;  
Johari Window-Concept, explanation, implementation

**Unit 5 - Needs & Self (02 hrs)**

Needs and its importance; Understanding harmony and its relevance in actualization at personal and professional levels

**Unit 6 - Ethics and values (02 hrs)**

Professional ethics and their importance for students; Understanding the importance of values & their application in everyday life

**References**

1. Business Law-By Saroj Kumar
2. Law of Contract-By Avtar Singh
3. Business Law-By G K Kapoor
4. Business & Commercial Laws –By Sen & Mitra
5. Business Law for Engineers-by Calvin Frank Allen
6. Hilgard, E. R.; Atkinson, R. C. & Atkinson, R.L. (1975). Introduction to Psychology. 6th Edition. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.
7. Govindarajan, M; Natarajan, G. M. & Senthilkumar, V.S. (2013). Professional Ethics & Human Values. Prentice Hall: New Delhi
8. Gogate, S. B. (2011). Human Values & Professional Ethics. Vikas Publishing: New Delhi.
9. Govindarajan, M; Natarajan, G. M. & Senthilkumar, V.S. (2013). Professional Ethics & Human Values. Prentice Hall: New Delhi
10. Jayshree Suresh, Raghavan B.S.(2016). Human Values & Professional Ethics: S Chand & Company.Pvt.Ltd: New Delhi.

**(HSMC) Innovation and Creativity**

**Teaching Scheme**

Lectures : 1 hrs/week

**Examination Scheme**

T1 and T2 - 20 Marks each  
End - Sem Exam – 60 Marks

**Course Outcomes:**

CO1: Discover the creative / innovative side within herself/himself.

CO2: Hone entrepreneurial and leadership skills within his/her personality.

CO3: Develop new ways of thinking and Learn the entire innovation cycle from Ideation to Go-To-Market.

CO4: Study frameworks, strategies, techniques and business models for conceived ideas.

CO5: Develop skills for evaluating, articulating, refining, and pitching a new product or service.

**Syllabus:**

Introduction to Innovation, Personal thinking preferences, 'Innovation' mind set, Everyday creativity and eliminating mental blocks, Introduction to Innovation, Creative thinking techniques, Innovation types, Idea management and approaches, Teaming techniques for creativity, Idea Conception, Idea Scoping, Self Evaluation, Idea Brainstorming sessions, Idea Verification, Market Evaluation, Concept Evaluation, Idea Verification, Prototype Evaluation, Protection/Patent review, Innovation Case Study, Idea Presentations, Idea Incubation, Product and Market Plan, Product and Market Development, Innovation Case Studies, Idea Incubation and Product Launch, Marketing and selling, Post Launch Review

**Reference Books:**

1. Jeff Dyer Hal Gregersen, Clayton M. Christensen, "The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators, Harvard Business Review Press, 2011.
2. Paddy Miller, Thomas Wedell-Wedellsborg, "Innovation as Usual: How to Help Your People Bring Great Ideas to Life, Harvard Business Review Press, Kindle Edition.