



## Degree course in “Bachelor of Planning”



Department of Architecture and Planning  
Maulana Azad National Institute of Technology,  
Bhopal

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## **Degree course in “Bachelor of Planning”**

### **General background**

The planning and development of human settlements is becoming a most engaging task with the passage of time. Emerging socioeconomic and cultural realities, coupled with technological advancement and a rapidly growing population are making it imperative for physical planners to seek new options for the development of human settlements at all levels. In addition to metropolitan areas and cities, the smaller towns and villages also need due attention of qualified physical planners.

Department of Architecture and Planning, MANIT Bhopal has been engaged in imparting Architecture education for more than 40 years and has been running a Post Graduate programme in Urban Development for last 14 years. In tune with the reputation of being a pioneering institution in Central India the Department of Architecture and Planning, MANIT Bhopal is proposing to institute a Bachelor of Planning programme with an annual intake of 40 students. This programme aims at meeting the variety of emerging needs of physical planning in the country

In India, planning education is commonly imparted at the post-graduate level. There are only *four* institutes currently offering Bachelor of Planning (B. Planning) Programme. This programme is expected to have a far reaching impact on the content, quality and status of planning profession in India.

### **Educational Objectives**

The objectives of the Bachelor of Planning Program include:

- Creation of an awareness of the context in which urban planning and development operate
- Imparting knowledge of how planning can influence the community and the physical environment
- Equip students with the competence to apply their knowledge in a wide range of situations
- Creation of an understanding of the contribution other disciplines can make to planning and vice versa, and
- Developing skills in policy formulation, research and evaluation, design and communication.

### **About the Program**

The profession of city and regional planning is primarily involved in helping people and communities manage growth and change in their physical, social and economic environments. The focus is on understanding how cities and towns (human settlements) function and how to make them better places for people to live and to prosper. Planning has its roots in engineering, architecture, landscape architecture, law, social welfare and government reform. The practice of city and regional planning is both science and art. It involves technical competence, creativity, hard-headed pragmatism and the ability to develop a vision of the



future and to build on that vision. Planners today combine design, quantitative and people skills to assist communities and society.

The degree programs prepare students for professional careers in the design of human settlements in harmony with the natural environment and the needs of society. Practicing planners work in public agencies and private consulting firms, preparing comprehensive plans for projects, neighbourhoods, cities, and entire regions. They deal with the use of land, housing, transportation, public facilities, and open space. In addition, they are responsible for finding the means to make their plans become a reality by budgeting for public projects and programs and by reviewing and regulating private development.

The curriculum leading to the Bachelor of Planning provides a broad, interdisciplinary education. Areas of specialization for planners include economic development, environmental planning, historic preservation, housing and community development, international planning, land use and zoning, and urban design. The program is studio-based, and graduates earn a professional Bachelor of Planning degree. The curriculum is designed to introduce beginning students to the general knowledge required by the profession, as well as to ground students in physical, economic, sociological, computer, graphic design, analytical and communication skills. The curriculum consists of general and specialized professional planning lecture or seminar courses and a sequence of “studio” courses, which are real-world projects worked on by students in small groups. Studios give students an opportunity to try out techniques of urban planning in a creative team setting, usually for real clients.

## **Career Opportunities**

City and Regional Planning is one of the most exciting career fields available today. As the population increases and becomes more concentrated in certain areas of the country, carefully planned development is the only way to ensure that the quality of life in those areas is maintained and enhanced. Much of the responsibility for promoting and maintaining the good life in a community belongs to the city and regional planners.

Professional planners prepare comprehensive plans for development projects, neighbourhoods, cities, states and regions. They deal with transportation, housing, community facilities, commercial areas, public safety, open space, urban design, and the use of land. And they're responsible for developing a plan of action to turn their paper plans into reality - into roads, buildings and open spaces. The planner's goal is to help communities and regions grow in harmony with the natural environment and in tune with public concerns.

Urban planners develop solutions for many of society's most pressing problems. Planners provide a variety of services to cities, towns, states, regions, and private clients interested in changing their physical, economic, or social structures. Planners generate plans for housing the poor, creating jobs, designing public parks, preserving historic buildings, or resolving traffic congestion and environmental problems. Some planners specialize in physical planning and design while others analyze policy and develop social, economic, and environmental programs.

The future is bright in the field of planning. Graduates go on to both private and public sector jobs. Additionally, planning graduates often attain enormous professional responsibility and face significant challenges. Planners work in local and regional councils, central government, consultancies and businesses in areas as diverse as environmental management, city planning,



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transportation, conservation, tourism, heritage, property development, recreation, social and economic development.



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**BACHELOR OF PLANNING**  
**I Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T/S	No.	Hrs.	L	T	
BP-101	Basic Design - I	2	3	1	6	2	3	5
BP-102	Materials and Principles of Construction	1	3	1	3	1	3	4
BP-103	Applied Mathematics	2	2	1	3	2	2	4
BP-104	Basics of Structural Design	2	2	1	3	2	2	4
BP-105	Statistical Methods - I	2	2	1	3	2	2	4
BP-141	Basic Design - I	1	2	0	0	1	2	3
BP-142	Materials and Principles of Construction	1	2	0	0	1	2	3
BP-143	Arts and Graphics - I	2	2	0	0	2	2	4
BP-144	Workshop	2	2	0	0	2	2	4
	<b>Total</b>	15	20			15	20	35

**II Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T/S	No.	Hrs.	L	T	
BP-151	Basic Design - II	2	3	1	6	2	3	5
BP-152	Statistical Methods - II	2	2	1	3	2	2	4
BP-153	History of Art and Culture of Settlements	2	2	1	3	2	2	4
BP-154	Applied Geology	1	2	1	3	1	2	3
BP-155	Communication skills	2	2	1	3	2	2	4
BP-191	Basic Design - II	1	2	0	0	1	2	3
BP-192	Theory of Design	2	1	0	0	2	1	3
BP-193	Arts and Graphics - II	1	3	0	0	1	3	4
BP-194	Surveying	2	3	0	0	2	3	5
BP-195	General Proficiency	0	0	0	0	0	5	5
	<b>Total</b>	15	20			15	25	40



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**III Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T /S	No.	Hrs.	L	T	
BP-201	Evolution of Human Settlements	2	2	1	3	2	2	4
BP-202	Principles of Planning - I	2	1	1	3	2	1	3
BP-203	Techniques of Planning - I	2	1	1	3	2	1	3
BP-204	Ecology and Resource Management	2	1	1	3	2	1	3
BP-205	Traffic and Transportation Planning - I	2	1	1	3	2	1	3
BP-241	Principles of Planning - I	1	1	0	0	1	1	2
BP-242	Techniques of Planning - I	1	1	0	0	1	1	2
BP-243	Computer Programming and Applications - I	1	3	0	0	1	3	4
BP-244	Planning and Design Studio (Transportation Aspects)	2	9	0	0	2	9	11
	<b>Total</b>	15	20			15	20	35

**IV Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T /S	No.	Hrs.	L	T	
BP-251	Quantity surveying and Specifications	2	1	1	3	2	1	3
BP-252	Principles of Planning - II	2	2	1	3	2	2	4
BP-253	Techniques of Planning - II	2	2	1	3	2	2	4
BP-254	Housing and Community Planning	2	2	1	3	2	2	4
BP-255	Elements of Economics	2	1	1	3	2	1	3
BP-261-262	Elective - I	2	1	0	0	2	1	3
BP-291	Computer Programming and Applications - II	1	2	0	0	1	2	3
BP-292	Planning and Design Studio (Housing Aspect)	2	9	0	0	2	9	11
BP-293	General Proficiency	0	0	0	0	0	5	5
	<b>Total</b>	15	20			15	25	40



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**V Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T /S	No.	Hrs.	L	T	
BP-301	Demography and Urbanisation	2	2	1	3	2	2	4
BP-302	Traffic and Transportation Planning - II	2	2	1	3	2	2	4
BP-303	Environmental Science	2	2	1	3	2	2	4
BP-304	Settlement Geography	2	2	1	3	2	2	4
BP-305	Development Planning	3	2	1	3	3	2	5
BP-341	Utilities and Services Planning	2	1	0	0	2	1	3
BP-342	Planning and Design Studio (Area / Zonal Planning)	2	9	0	0	2	9	11
	<b>Total</b>	15	20			15	20	35

**VI Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T /S	No.	Hrs.	L	T	
BP-351	Rural and Resource Planning	2	2	1	3	2	2	4
BP-352	Landscape Planning and Design	2	2	1	3	2	2	4
BP-353	Land Economics and Management	2	2	1	3	2	2	4
BP-354	Elements of Settlement Sociology	2	1	1	3	2	1	3
BP-361-364	Elective - II	2	1	1	3	2	1	3
BP-391	Urban Design and Conservation	2	1	0	0	2	1	3
BP-392	Planning and Management of Informal Sector	1	2	0	0	1	2	3
BP-393	Planning and Design Studio (Development Plan Preparation)	2	9	0	0	2	9	11
BP-394	General Proficiency	0	0	0	0	0	5	5
	<b>Total</b>	15	20			15	25	40



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**VII Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T /S	No.	Hrs.	L	T	
BP-401	Operation Research and System Analysis	2	1	1	3	2	1	3
BP-402	Planning Legislation	2	1	1	3	2	1	3
BP-403	Environmental Planning	2	1	1	3	2	1	3
BP-404	Remote sensing & GIS	2	2	1	3	2	2	4
BP-411-412	Elective - III	2	2	1	3	2	2	4
BP-441-442	Elective - III	1	2	0	0	1	2	3
BP-443	Planning Information Systems	2	2	0	0	2	2	4
BP-444	Planning and Design Studio (Block/ Sub Regional Plan)	2	9	0	0	2	9	11
	<b>Total</b>	15	20			15	20	35

**VIII Semester**

Course No		Periods per week		No. and duration of theory paper		Credits		Total Credits
		L	T /S	No.	Hrs.	L	T	
BP-451	Professional Practice	2	1	1	3	2	1	3
BP-452	Project Planning, formulation and Appraisal	2	1	1	3	2	1	3
BP-453	Public Finance	2	1	1	3	2	1	3
BP-454	Urban Management	2	1	1	3	2	1	3
BP-461-463	Elective - IV	2	2	1	3	2	2	4
BP-491-493	Elective - IV	1	2	0	0	1	2	3
BP-494	General Proficiency	0	0	0	0	0	5	5
BP-498	Thesis / Dissertation	4	12	0	0	4	12	16
	<b>Total</b>	15	20			15	25	40



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List of Electives:

<b>S.No.</b>	<b>No. of Elective</b>	<b>Subject code</b>	<b>Subject name</b>
1	<b>Elective-I</b>	BP-261	Traditional & Contemporary Indian Architecture
2		BP-262	Aesthetic Art & Appreciation
4	<b>Elective-II</b>	BP-361	CAD & Visualisation
5		BP-362	Valuation & Arbitration
6		BP-363	Site & Landscape Planning
7		BP-364	Disaster Management
8	<b>Elective-III</b>	BP-411	Urban Energy Systems
9		BP-412	Energy efficient planning
10	<b>Elective-IV</b>	BP-461	Political Systems & planning
11		BP-462	Urban & Regional Planning
12		BP-463	Sustainable Planning



## **FIRST SEMESTER**

### **BP-101 & BP-141 Basic Design - I**

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Use of various drafting equipments; lettering - freehand and block; drawing of logo, insignia and jali patterns; orthographic projections- principles and concepts; one, two and three dimensional objects. Construction of linear and diagonal scale; isometric and perspective views; sciography and rendering. Anthropometrics and furniture layout of a room; building drawing- plans, elevations and sections at appropriate scales.

Preparation of base maps and graphical presentation of statistical data.

### **BP-102 & BP-142 Materials and Principles of Construction**

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Unit: 1 Introduction to Building Materials and Finishes:

Brick, timber, stone, cement, lime, glass, R.C.C., asbestos, paints and varnishes, Fibre Reinforced Plastic (FRP)

Unit: 2 Structural Uses of Timber

Timber used as lintels, post and trusses.

Unit: 3 Principles of Construction of Building Elements:

Foundations, footings, D.P.C., flooring, sills, lintel, roofing, parapets, coping, cladding, expansion joints, waterproofing of roofs, external wall section with detail, beams, columns, slabs, retaining walls.

Unit: 4 Site Development and Layouts.

Principles and components of site development, setting out of buildings on site.

Unit: 5 Principles of Construction of Service Lines and Networks

Layout and construction of roads, culverts, flyovers, sewer and storm water drain, water supply line, service duct under the road.

### **BP-103 Applied Mathematics**

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Unit: 1 Linear Algebra

Real numbers, vectors and vector spaces, linear independence of vectors; matrices, addition, multiplication, inversion and square of matrices, rank of a matrix, solution of linear equations, computer methods of matrix, solution of linear equations, computer methods of matrix algebra.

Unit: 2 Calculus

Functions and their graphic representation, differential co-efficient, methods of differentiation, Taylor's theorem, indeterminate forms, function of several variables, partial differentiation, maxima and minima. Methods of integration, definite integrals, areas, volumes, centre of gravity, moment of inertia.

Unit: 3 Analytical Geometry of Two and Three Dimensions

Elementary concepts of conic sections, planes, spheres paraboloids, ellipsoids, hyperboloids.

Unit: 4 Differential Equations

Order and degree of differential equations, variable, separable, homogeneous, exact and linear equations, second order equation with constant co-efficient, complementary function, particular integrals of exponential and trigonometric functions.



Unit: 5 Numerical Analysis (For Use in Computer Methods)

Interpolation and extrapolation, numerical differentiation, numerical integration.

Note: In unit 3 and 5, emphasis is to give a basic idea to the students of the shape of different solids as well as the computer methods of evaluation of mathematical function.

### **BP-104 Basics of Structural Design**

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Unit: 1 Compression and Tension

Forces of compression and tension, concept of equilibrium of forces and conditions of equilibrium, concepts of elasticity and plasticity, Hooke's law, stress-strain relationship of tension and compression.

Unit: 2 Columns and Walls

Phenomenon of buckling, short and long columns, concept of slenderness ratio, masonry wall.

Unit; 3 Shear Force and Bending Moment Diagrams

Unit: 4 Principles of Design of Structures

Principles of design of beams, slabs (one way and two way) and cantilevers, framed structures.

### **BP-105 Statistical Methods - I**

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Unit: 1 Introduction

Statistical data and methods; collection of data, record, file, sources of data. Questionnaire design, design of sample surveys; simple random sampling, stratified sampling etc. data coding, data verification.

Unit: 2 Data Presentation

Statistical tables; types of tables, comparisons, methods of presentation, graphic presentation; types of charts, plotting a curve, rules for drawing curves, bar charts, pictography, pie charts, histograms.

Unit: 3 Statistical Methods

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

Unit: 4 Correlation

Degree of correlation, correlation coefficients, methods of concurrent deviation, co-efficient of rank correlation, partial correlation analysis and multiple correlation.

Unit: 5 Probability

Introduction, addition rule, conditional probability, multiplication rule, random variables and probability distribution, mathematical expectation.

Unit: 6 Sampling Distribution

Nature of sampling distribution, Binomial distribution, Poisson's distribution and normal distribution.

### **BP-143 Arts and Graphics - I**

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Unit: 1 Point and Line

Significance of point and line; motifs and composition in points and lines; types of lines; horizontal, vertical, diagonal, curves etc. and kind of effect each line generates; predominant lines in a building can be studied; principles of composition in terms of balance, harmony



**Unit: 2 Texture and Colour**

Creating texture with points and lines; appreciation of textures of various materials like brick, stone, wood, etc. use of various textures in the design exercises undertaken in the architectural design studio; introduction to the colour system, shade, tone, tint, etc.; harmonious and contrasting colours; warm, neutral and cool colours and their use in art to create varying effect; use of colour in design exercises; use of texture in colour.

**Unit: 3 Shape and Form**

Basic shapes and forms; concept of negative and positive space; emphasis on receding and projecting planes as well as basic forms of buildings; outdoor sketching to understand the basic forms; understanding the concept of scale and proportion in composition; introduction to human figures.

**BP-144 Workshop**

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Materials and techniques used in physical models, use of hand tools, making scale models of a residential house and a site layout using appropriate materials and techniques.



## **SECOND SEMESTER**

### **BP-151 & BP-191 Basic Design - II**

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Factors and concepts related to building design-climate, site characteristics, land form, visual elements, behavioural factors and space utilization; design of residential, commercial, institutional and other buildings (only two types to be selected every year).

Measured drawings to develop perception of area, volume and building elements relationships.  
Appreciation studies of residential, commercial or industrial area.

### **BP-152 Statistical Methods - II**

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Unit: 1 Linear Regression Analysis

Linear and non-linear regression, lines of regression, coefficient of regression.

Unit: 2 Time Series

Variation in time series, trend analysis, cyclical variation, seasonal variation, irregular variation, time series analysis forecasting.

Unit: 3 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.

Unit: 4 Estimation and Testing of Hypothesis

Types of estimation; point, interval, testing of hypotheses, statistical hypothesis, simple and composite tests of significance, null hypothesis, alternative hypothesis. types of errors, level of significance, critical region.

Unit: 5 Large Sample Test, Chi-Square Test

Test for single proportion; test of significance for single mean, chi-square distribution applications of chi-square distribution; test of goodness of fit.

### **BP-153 History of Art and Culture of Settlements**

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Unit: 1 Art, Culture and Architecture of Old Civilizations

Fundamentals of art; definition, scope, different art forms, materials and techniques; cave art in Europe and India; Indus Valley, Mesopotamia, Egyptian, Greek and Roman art; art of Gandhara, Byzantine, Buddhist, Islamic and Medieval period.

Unit: 2 Development of Building Technology

Gothic, trabeated, corbelled, arch, domical etc.

Unit: 3 Revolutions and their Influences on Culture

Revolutions; from renaissance to industrial revolution; India and other civilizations upto 17th century, colonial, industrial, American and French; theory of evolution; artists of the renaissance; Botticelli, Raphael, Leonardo da Vinci and Michael Angelo; impressionism and post-impressionism.

Unit: 4 Art and Its Development

Art from 1900 to 1920; art in India and West from 1920 to the present century art.

Unit: 5 New Art Forms and Techniques

Print-making, photography, pottery, weaving, action painting mobiles, etc.



### **BP-154 Applied Geology**

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#### Unit: 1 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-, geological and time scale; Indian stratigraphy

#### Unit: 2 Geological Structure, Land Forms, 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; mechanical and chemical processes, soil formation, landslides, sources and causes of crystal displacements, types, characters and effects, unstability of hill slopes, prevention.

#### Unit: 3 Earthquake

Historical account, tectonic behaviour and seismic belts; causes, intensity and magnitude of earthquakes, seismic zoning in India, earthquake waves and their character, particle motion and behaviour in various geological formations; seismography, accelerograms and their interpretation, prediction and prevention; earthquake resistant structures.

#### Unit: 4 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 geotechnical structures; geophysical explorations.

#### Unit: 5 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), aquiclude, aquitard; 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.

### **BP-155 Communication Skill**

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#### Unit: 1 Language and communication:

Spoken English and grammar. Technical composition (e.g., reports, papers essays) writing

#### Unit: 2 Public Speaking

Making sequences and framework for presentation, importance of posture, gesture, pronunciation, tone etc. on Presentation quality.

#### Unit: 3 Architectural communications

Presenting simple, complex architectural concepts and proposal with the help of text, drawings, transparencies, slides, video, photographs, models etc.

#### Unit: 4 Computer aided presentation

Preparing simple and interactive slide shows and presentations using computer software  
Article review, presentations and seminars.

#### Unit: 5 Individual and group work on selected theme.



### **BP-192 Theory of Design**

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Unit: 1 Form

Form in inanimate nature, biological nature and human environment.

Unit: 2 Designs

Design as a problem solving activity, as a multivariate activity; idea-idealism-form-design, value judgement in design.

Unit: 3 Perceptions

Thinking techniques, intuition.

Unit: 4 Building Elements

Elements of a building and their meaning; measurable and non- measurable aspects in the design of building elements.

Unit: 5 Architecture

Architecture of space, air, water and earth; examples from architecture, art, sculpture, etc.

### **BP-193 Arts and Graphics - II**

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Unit: 1 Basic Design

Compositions in shape, form and colour with special emphasis on rhythm, balance, harmony and proportion; human figures in different scales; sketches of different buildings, streets, etc; process of creative thinking.

Unit: 2 Standard Presentation Format

Composition of drawings, proportion of lettering for varying emphasis, drawing pens and their use for different purposes; standard drawing format, standard symbols and notations in drawings.

Unit: 3 Presentation Drawings and Communication Skills

Preparation of presentation drawings of a house, cluster and a site layout in black and white as well as colour; data presentation; communication skills for a presentation.

Unit: 4 Sculpture and Modelling

Concrete Sculpture, plasticine modelling; sculpture and modelling of natural landscape with plaster of paris; paper mache.

Unit: 5 Mural Painting

With pastel, crayon etc. on the wall.

### **BP-194 Surveying**

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Unit: 1 Basic Principles and Chain Surveying

Definitions, scales and symbols; measurement of distance; instruments used, ranging of survey lines, chaining a line with examples, chaining on sloping ground, errors in chaining, tape corrections; chain surveying; principles, off-sets, booking field notes, instruments, obstacles in chaining, plotting chain survey with practical examples.

Unit: 2 Traversing and Plain Table Surveying

Compass and chain traversing; instruments used, methods of traversing, bearing lines, local attraction, plotting, magnetic declination, precautions in using compass; traversing by theodolite, instruments used and methods; plain table surveying methods, two-point and three- point problems; exercise in preparation of base map of small areas.



**Unit: 3 Computation of Areas and Levelling**

Computation of areas; from field notes and from plan with example, levelling; instruments used, definitions, principles, reduction of levels, classification of levelling, errors in levelling, contouring; characteristics of contour lines, interpolation and interpretation of contours, uses of contour lines.

**Unit: 4 Study of surveying instruments and their use, Study, test, degree of accuracy, use and care of survey instruments and accessories**

**Unit: 5 Scales: Plain scales, Diagonal scales, comparative scale, shrunk scale, vernier scale. Compass survey, Leveling and contouring**

**BP –195 General Proficiency**

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General Proficiency is meant for developing co-curricular activities in individual student. By this they are encouraged to participate in ASP / NASP activities, NSS, NCC, Debates, Dramas, Paper presentations, Sports and Games etc. at Dept./College/ University level.



## **THIRD SEMESTER**

### **BP-201 Evolution of Human Settlements**

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#### Unit: 1 Introduction

The importance and significance of the study of history, human settlements as the physical expression of a civilization; increasing urbanisation and need for higher levels of expertise to handle the situation in future; human settlements planning as the end result of this understanding.

#### Unit: 2 Planning Elements and Dimensions

The concept of scale; elements of settlement planning; space, form and structure; role of climate in the final form of a settlement pattern; the technological aspects of form through the ages.

Concept of time as dimension of the built form; concept of space and scale as followed through different cultures; the elements of the town, the house, the street, the chowk; social and cultural criteria of location of towns and activities within it.

#### Unit: 3 Planning Through the Ages

Planning in ancient India; Manasara Treatise and socio-cultural bias of planning; planning as an activity reflecting the cultural context of an era.

Planning in the other parts of the world; the structure of the Islamic city and the Role of the Jami Masjid as a landmark planning in Greece; the Roman city, the European Medieval cities and Medieval planning in India, the common elements of the Indian and European Medieval towns; renaissance and idea of the baroque plan.

#### Unit: 4 The Modern City

Technological advances and their effect on the town; utopian thinking and movements about urban improvement and planning; the concept of neighbourhood planning; planning concept and city structure in typical new town design, foreign examples; plan and concept of Chandigarh.

#### Unit: 5 Synthesis

The concept of ring towns and satellite towns; Delhi Master Plan and the concept of NCR; disorientation of contemporary towns from its cultural context; the concept of conservation; the role of planner as a central figure to understand the present day problems through the medium of the study of history

### **BP 202 & BP-241 Principles of Planning - I**

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#### Unit: 1 Concept Formation and Perception of Space

Thinking process; cognitive units, concept formation, hypothesizing, conceptual scheme and behaviour formation; perception of space, behaviour pattern in small spaces-, space at city scale; urban activity patterns, urban symbolism, image of the city, building attributes, cognitive maps; urban behaviour; attitudes towards city, metropolitan personality, geographical space, functional space.

#### Unit: 2 what is planning?

Definitions, planning as a hierarchical process, systems concept, systematic planning, optimisation, planning as a problem solving process, philosophy and purpose of planning; justification of planning, essential features of planning, ecological perspective of planning, the scope and meaning and objectives of planning; town planning as a practice, profession and discipline; the nature of town planning problems; development of planning thought.

#### Unit: 3 Physical Planning

Origin of physical planning; basic questions: essential features and cornerstones of physical planning, changes within physical environment; systemic change, systems approach to physical planning,



control mechanisms, physical planning as a guidance and control of change contributions of physical planning to economic and social development, planning in transition; dimensions of change, future directions.

**Unit: 4 Process of Planning**

Definition and meaning of values, norms, goals and objectives methodology of goal formulation; development plans: form and content of the RAG report new planning system structure plans, local plans. district plans, action area plans, public participation, people and plans, regional planning.

**Unit: 5 Plan Preparation and Implementation Agencies**

Central, state and local government agencies; management structures of agencies; development control; regulations; importance of town and country planning acts in India.

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**BP-203 & BP –242 Techniques of Planning - I**

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**Unit: 1 Technique 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, techniques of reducing and enlarging maps; notations - basic disciplines of maps.

**Unit: 2 Data Base for Planning and Socio-Economic Surveys**

Data requirements for urban and regional planning; sources of primary and secondary data; questionnaire design, measurement scales and their application; sampling techniques, types of socio-economic surveys; self surveys, interviews, mailed questionnaires and observer participation.

**Unit: 3 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.

**Unit: 4 Techniques of Presenting and Analysing Data**

Land use classification, coding and analysis; residential and non- residential density patterns and analysis, tabulation of data; graphical presentation of data; pie diagrams, histograms, bar charts, normal, semi-log and double log graphs and their uses; colour, black and white presentation techniques; basic disciplines of illustration and tables.

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**BP-204 Ecology and Resource Management**

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**Unit: 1 Introduction**

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, trophic levels, food chain, food web, ecological pyramids.

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

Resources and human settlements, impact of advanced agricultural methods, urbanisation and industrialisation. on nature; urban ecosystem approach, evolution and significance; soil, water, land, vegetation and energy resources; resource development and management.

**Unit: 3 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 analyses required to evolve ecological parameters.

**Unit: 4 Environmental Impact Studies**

Environment impact studies of development projects.



### **BP-205 Traffic and Transportation Planning - I**

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#### Unit: 1 Urbanisation and Transport Problem

Traffic characteristics and problems at national, regional and urban level; different modes of transport; slow and fast and their characteristics; vehicle types, capacity, overloading factor; vehicle characteristics and road characteristics.

#### Unit: 2 Urban and Regional Road Design

Road hierarchies, classification, capacity and level of service; space standards for road design, land acquisition, components; objectives and functions; intersection types; uncontrolled, controlled; space sharing and time sharing junctions; merits and demerits, design considerations; design in built up areas, cycling and pedestrian systems, design considerations and guidelines; road and road transport infrastructure; terminals, depots, bus bays, stops, fuel stations etc.

#### Unit: 3 Surveys and Studies

Demand and supply surveys and studies: traffic assessment; traffic volume, traffic density, traffic flow and speed; parking supply and demand survey; control, provision and layout of on street and off street parking, traffic regulatory measures for parking, pedestrian facilities; pedestrian volume studies, origin-destination studies, controlled crossings.

#### Unit: 4 Geometric Designs of Roads and Intersections

Components of geometric design in new development and built-up areas; horizontal and vertical alignment, network alignment planning, sight distance, cross-section, alignment check, lateral and vertical clearance, control of axis; design guidelines for transport infrastructure.

#### Unit: 5 Traffic Management

Objectives, principles and approaches for traffic management; traffic signs and signals; types of traffic signs, sign standards, location and maintenance; traffic signals; types, advantages and disadvantages; traffic safety, environmental area concept and application.

### **BP-243 Computer Programming and Applications - I**

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#### Unit: 1 Introduction

Introduction to computer; types of computer, computer Organisation, computer peripherals, input/output media, devices, software/hardware concepts and history of computer; bits, bytes & concepts of high level language.

#### Unit: 2 Flow Charts

Flow charts, data processing methods, EDP, concepts of data, data items, records and files, types of files; design of Performa, data validation, data coding and preparation for computer analysis.

#### Unit: 3 Other Packages

Other packages related to data-base (OBMS) with applications in the area of planning.

#### Unit: 4 Word Processing Package and Its application

Word-processing package, mail merge, spell check mail merge.

### **BP-244 Planning and Design Studio (Transportation Aspects)**

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Following surveys relating to transportation aspects will be carried out: traffic volume survey, speed and delay studies, parking studies, pedestrian studies, road geometrics and road components, rotaries and signalised intersections.

Analysis of the data and presentation of the same through scale drawings and written documents; design of road sections, road junctions and rotaries.



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Preparation of area traffic circulation plan by studying the existing land use, existing circulation pattern, geometric design, level of services provided by the networks and traffic management measures.



## **FOURTH SEMESTER**

### **BP-251 Quantity Surveying and Specifications**

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#### Unit: 1 Specification

Significance, methods of writing specifications; general specifications for common building materials and building trades; earthwork, structure (framing), flooring, stonework, plasters, waterproofing of basements and terraces, roofing, doors and windows.

#### Unit: 2 Specifications for Infrastructure Work

Water supply, pipes and sanitary fittings, overhead tanks. electrical fixtures, elevators.

#### Unit: 3 Specifications for External Work

Landscaping, roads, pathways, boundary wall, pools, lighting, concept of outline specifications.

#### Unit: 4 Estimation

Cost estimation and determination of rates of works involved in the infrastructure services.

#### Unit: 5 Development Costs of Planning Schemes as per Standards, Norms

Costing procedure; raw land, land for different land use categories, development works, interest on investment, and phasing.

### **BP-252 Principles of Planning - II**

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#### Unit: 1 Urban Structure and Growth

Definitions, concepts and examples of urbanisation, urban growth, urbanism, development of a city as an organism, a physical entity, a social entity and a political entity; land values, economic attributes of activity location, economic forces in urban development, locational theory, the urban functions and interrelationships, the theories of urban structure and growth.

#### Unit: 2 Land Use Planning

Definition and explanation of the concepts of density, floor area ratio, land use and zoning, land use and use classification, location and interrelationship; case studies of land use planning in Indian cities, foreign examples and comparisons; basic concepts of land use planning.

#### Unit: 3 Types of Planning

Long term and short term planning, perspective planning, development planning, normative planning, sectoral and spatial planning, single and multi-level planning, integrated area planning; the comprehensive development plan of a city, its scope and contents, zoning development plans and layout plans, and case studies; design concepts for new towns; the planning process followed in India, planning at the local, state, regional and national levels.

#### Unit: 4 Principles of Regional Planning

Integration between national and local level plans, spatial and aspatial planning, sectoral plans and their spatial dimensions; balanced growth and development; the rural-urban relationships; city in the context of a region, their classification system, spatial structure of a region, principles in delineation of a region.

#### Unit: 5 Regional Planning in India

Concepts of balanced regions, development as imbibed in the five year economic development plans; unbalanced growth, special and backward regions; national capital regional plan; south-east resource region; river valley projects; implementation machinery for regional plans, regional planning boards, funding procedures and phasing.



### **BP-253 Techniques of Planning - II**

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#### Unit: 1 Planning Practice in India

An overview of evolution from piecemeal projects, town planning schemes, comprehensive development plans for towns and cities to regional planning, efforts; metropolitan planning and metropolitan region development plans; scope and content of planning practice today; role of central and state and local governments in urban and regional planning and development; evolution of local governments, development authorities and other planning and development agencies and their role in planning and planning administration.

#### Unit: 2 Spatial Standards

Formulation of spatial standards for residential, industrial, commercial and recreational areas; space standards for facility areas and utilities.

#### Unit: 3 Regional Survey

Techniques for conducting regional surveys; data requirements for various types of regional plans; district level plans, metropolitan region plans, backward regions, resource regions, etc.; regional delineation techniques.

#### Unit: 4 Plan Preparation Techniques

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.

#### Unit: 5 Introduction to Advanced Techniques

Systems approach to planning, thresholds analysis, retail location and industrial location analysis; intervening opportunity models.

### **BP-254 Housing and Community Planning**

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#### Unit: 1 Housing as a Basic Human Necessity

A major land use component and integral sector of urban and regional development; the housing problem; classification of housing by climate, materials, location, tenure, income, sociocultural features and design.

#### Unit: 2 Role of Community Development in Housing

Communities; its characteristics and housing.

#### Unit: 3 Housing Standards

Basic principles in formulating housing standards for rural and urban areas; desirable and minimum standards.

#### Unit: 4 Planning- and Design of Housing Areas

Physical and social infrastructure; housing densities and implications; patterns of housing development in urban areas, housing for the urban poor and the informal sector; strategies and approaches with case studies; basic factors and reasons for emergence of slums; identification of slum areas; socioeconomic implications of slums; clearance/improvement of slums; sites and services schemes, squatter up-grading, incremental approach.

#### Unit: 5 Housing and Finance Policies

Co-operative housing; objectives and principles; management and financing of housing projects; investment in housing in public and private sectors.



**BP-255 Elements of Economics**

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Unit: 1 Definition and Scope of Economics

Central problems of economics; micro and macro economic decisions, use of economics in planning.

Unit: 2 Theories of Demand and Supply

Law of demand and supply, elasticities of demand and supply, its use in planning.

Unit: 3 Theories 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.

Unit: 4 Concepts of Income, Employment and Money

Classical and modern approaches, growth and development indicators; measures of national income, defining development and under development.

Unit: 5 Introductions 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.

**BP – 261 – BP 262 Elective – I**

**BP – 261 Traditional and Contemporary Indian Architecture**

This subject intends to develop an understanding in Contemporary Architecture in India.

Unit: 1 Colonial Architecture in India, emerging trends, works of Le Corbusier and Louis Kahn in India and their influence of Indian architecture.

Unit: 2 Meaning and element of vernacular architecture and related terms

Unit: 3 Chronological development of vernacular architecture in India

Unit: 4 Contemporary Indian architects: A.P.Kanvinde, Charles Correa, Anant Raje, Raj Rewal and others, their philosophies and examples.

Unit: 5 Postmodern architecture in India, examples.

**BP – 262 Aesthetic Art & Appreciation**

Unit: 1 Introduction of aesthetic relevant to architecture & study of influence of culture and socio economic development of architecture & art through history  
Study of various masterpieces of art and architecture through building sculpture painting etc.

Unit: 2 Development in environment design and technology with reference to world architecture through study of building materials

Unit: 3 Study to evolve the concept and framework for understanding architecture. It should lead to vocabulary and ancillary to discussing architecture ideas

Unit: 4 Discussion on Architecture and social function philosophical basis of architecture. Illustrate through example through both traditional and contemporary buildings



Unit: 5 Identifying the issue regarding traditional, ethnic, vernacular and social aspect for explaining Indian identity.

### **BP-291 Computer Programming and Applications - II**

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Unit: 1 Workstation

Graphical devices, concept of computer graphics

Unit: 2 Graphical Presentation

Packages related with graphical presentation of data (like harvard graphics).

Unit: 3 Drafting and Designing

A graphical package (like autocad) for drafting and designing 2D and 3D objects; storing drawings in different layers; creating digitizing a map through graphical package.

Unit: 4 Spread Sheet

Analysis of data using spread sheet package.

### **BP-292 Planning and Design Studio (Housing Aspects)**

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Unit: 1 Group Housing Design

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.

Unit: 2 Working Drawings

Introduction to the working drawings; preparation of plans sections, elevations and important details of an apartment unit; internal jury for group housing design and working drawings.

Unit: 3 Site Layout

Site analysis, development standards, and preparation of the design brief, Various considerations for site layout, conceptual approach to site planning preparation of preliminary layout and area analysis, Final layout showing the circulation and basic infrastructure, rough costing of the scheme.

### **BP –293 General Proficiency**

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General Proficiency is meant for developing co-curricular activities in individual student. By this they are encouraged to participate in ASP / NASP activities, NSS, NCC, Debates, Dramas, Paper presentations, Sports and Games etc. at Dept./College/ University level.



## **FIFTH SEMESTER**

### **BP-301 Demography and Urbanisation**

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#### Unit: 1 Study of Population

Demographic variables-fertility, mortality, migration; evolution of population study, contribution of Malthus; mortality-trends, mortality in developed and developing countries; 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, reproductive ages, advance ages; adjusted or standardised death rates; neonatal mortality rate; fertility-fertility trends, fertility and social and biological behaviour; differential fertility, ethnic group, socio-economical group mobility, location etc.; measures of fertility, crude birth rate.

Age-specific fertility rate; total fertility rate, net reproduction rate; migration-causes and consequences of population movement; reasons and types of migration trends; theories of migration and population movement; methods of measuring volumes of migration; direct and indirect measures; effects of migration on composition of population.

#### Unit: 2 Study of Demography

Source of demographic data; 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, cast 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.

#### Unit: 3 World Urbanisation and Urbanisation in India

Urban revolution; its preconditions; brief history of urbanisation in the world leading upto the industrial cities, related problems, concepts of urbanism and urbanisation; brief history of urbanisation in India; Mughal and British influences of Indian cities; post- independence urbanisation; urbanisation 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 agglomerations, standard urban area metropolis, megalopolis etc. functional classification of urban places.

#### Unit: 4 Settlement Systems and Role of Urban Area

Settlement system, primate city, rank-size rule, central place concept, concepts of complementary area, central goods and services, range, threshold etc; city-region relationships; structure of city regions, area of influence, dominance; rural-urban fringes; its structure, stages of growth, its role in urban growth; urbanisation, industrialisation and urban development; push and pull factors; migration trends and impacts on urban and rural development.

#### Unit: 5 Policies and Strategies for Directing Urbanisation Trends in India

Urbanisation policy, basic issues in urbanisation policy; role of national and state level policies; five year plans, latest attempts at urbanisation policy formulation in the country; salient features of the report of the national commission of urbanisation.

### **BP-302 Traffic and Transportation Planning - II**

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#### Unit: 1 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.

#### Unit: 2 Planning and Management of Transport System



Study area definitions, surveys and their types, sampling of travel methods, survey techniques; programming and scheduling, processing of travel data, analysis and interpretation of traffic studies; introduction to transport planning process; trip generation, trip distribution, trip assignment, modal split, land use transportation models; existing organisational and legal framework, traffic and environmental management techniques; review of the existing traffic management schemes in case cities.

**Unit: 3 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.

**Unit: 4 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.

**Unit: 5 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.

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**BP-303 Environmental Science**

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**Unit: 1 Environmental Disruption**

Study of environmental disruptions; different types of pollution such as air, water, marine and noise; pollution, constituents, sources, processes, tools and techniques of measurement, assessment of direct and indirect effects on land, water, vegetation, structures, living beings and others; pollution control and management.

**Unit: 2 Solid Waste Management**

Types of solid wastes and their management.

**Unit: 3 Forest Resources**

Forest resources; their importance and management; waste land development.

**Unit: 4 Environmental Problems**

Global environmental problems such as green house effect, ozone depletion, atmospheric change, change in micro- climate, bio-diversity and acid rain; environmental education awareness; institutional elements and international initiatives.

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**BP-304 Settlement Geography**

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**Unit: 1 Introduction to Settlement Geography**

Nature and scope of settlement geography, origin, setting evolution and structure of human settlements: man, environment and society; social economic and political consequences of geographical conditions; physical features and its effect on urban and rural communities.

**Unit: 2 Classification of Settlements**

Census classification, urban, rural census size classes: theories of settlement systems, primate city settlement system. rank size rule relationship; central place settlement systems, fundamental concepts,



concepts of hierarchy, concept of complimentary area. range of goods; (dynamics of central places. settlement systems in at developing economy.

**Unit: 3 Rural Settlements**

Types, patterns, morphology, house types, comparative study of origin and growth of settlements in ancient and modern times rural housing problems and policies.

**Unit: 4 Urban Settlements**

City structure, new towns and cities, environmental impact of planned and unplanned growth, rural - urban fringe.

**Unit: 5 Settlements as a System**

Rural and urban continuum, settlements as a hierarchy; areas of influences, areas of dominance, distance decay effect.

**BP-305 Development Planning**

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**Unit: 1 Developed, Developing and Under-Developed Economics**

Characteristics, indicators and phases of development; obstacles to development; business cycles; levels of development; series of development and planning relevance of economic development in physical planning.

**Unit: 2 Classical Theories of Development**

Introduction to Adam Smith's theory, specialisation and division of labour; Ricardian theory of rent; land value and quasi-rent.

**Unit: 3 Modern Theories of Development**

Keynesian revolution - innovation theory, back wash and spread effect;, critical minimum effort and stages of economic growth.

**Unit: 4 Models of Development**

Balanced vs. unbalanced - dualistic approach in development; derived development; Lewis model; Harrod-Domar model; Sen's model, etc.; development models in Indian planning - first to eighth five year plan; effectiveness of the models in Indian planning.

**Unit: 5 Issues in Growth and Development**

Planning in India - goals and objectives; targets and achievements impact, types of planning - regional disparities, population and poverty, unemployment, savings, balance of trade and payments, resource transfers and regional development, sectoral priorities and development; structural reform and its impact on growth; financing five year plans.

**BP-341 Utilities and Services Planning**

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**Unit: 1 Introduction, Basic Concepts and Theories**

Role of physical planner in planning of utilities and services; Objectives of utilities and services planning and implications for public health and environmental protection; hydrology, precipitation, hydrological cycle, urban water cycle; measurement of precipitation, intensity-duration-frequency relationships, rainfall formula, rainfall map; surface water; watershed, runoff, hydrograph, measurement of discharge for small and big rivers; rational method for estimating run off, unit hydrograph and application, flood frequencies, flood protection.

**Unit: 2 Storm Water System**

Estimating storm run-off, run-off co-efficient, rainfall intensity, time of concentration; gravity flow, hydraulic gradient line, Manning's formula and nomographs, full flow and partial flow; layout and



design of storm water system; general considerations, inlets, self-cleansing velocity, non-scouring velocity, physical layout-design principles, data requirement; hydraulic design of storm water system; computation procedure.

**Unit: 3 Sanitation and Sewer System**

On-site detention, design procedure for on-site detention; low cost appropriate technologies for sanitation; off-site and on-site technology up-gradation.

Sanitary sewer system, sewer network, materials used; sewer system location and layout, data needs and procedure of planning; quantity of sewage, standards for Indian cities, computer simulation design procedure for storm water and sewerage system; sewer appurtenances; sewer lift station, sewer pumping and forced main manholes.

**Unit: 4 Water Supply System**

Water distribution system, measurement of pressure and velocity, pressure requirement and number of storeys of buildings; water requirement for different land uses, factors affecting water demand, per capita requirement and its relationship with population size, variation of water consumption; seasonal & hourly, peak factor; demand of water for fire fighting; distribution and storage; types and locational criteria, operating storage for 24 hours, 14 hours and 8 hours of pumping; pumps; types, efficiency, head, head loss system, flow conservation of energy and total energy; water supply distribution system, layout design of water supply system; flow in pipe network, hydraulically equivalent pipes, pipes in series and parallel; pipe network analysis, Hardy Cross method and its use for designing complex network; 'Loop' and 'Branch' computer simulation for water supply design.

**Unit: 5 Solid Waste Disposal**

Solid waste management for Indian cities, issues and data base, quantity of solid waste and its character, collection and transportation, disposal of solid waste, land filling and composting, pre and post treatment; Indore and Bangalore methods, incineration, pyrolysis and recycling park.

**BP-342 Planning and Design Studio (Area Planning / Zonal Planning)**

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Different approaches to plan making; the concepts of master plan, comprehensive development plan - the structure plan, the sector plan, the zonal plan, and other types of plan making processes. Approach to developing zonal plan in the framework of a given master plan. Study and development of the relevant planning standards for different land uses. Development of sub division regulations and building bye- laws. Detailing of specific sites in the proposed zonal plans, covering different land uses. Report writing.



## **SIXTH SEMESTER**

### **BP-351 Rural and Resource Planning**

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#### Unit: 1 Introduction

Village as an organic entity; physical, social, and economic structure of village; village problems related to cultivated land, cultivable land, waste land, flooding and water logging, utilities and services, poverty and distress; rural urban relationship-, complementarities, continuation and dichotomy; problems related to rural-urban migration.

#### Unit: 2 Village Planning: Concepts and Institutional Framework

Transhumance, accessibility of villages, inter-village communication, delivery of social services, rural reconstruction and related programmes, improvement of rural sanitation, hygiene and drainage; Panchayat raj institutions; district block and village administration.

#### Unit: 3 Rural Planning in Relation to National and Regional Policies

Norms, principles and strategies for rural development; afforestation, soil conservation and wild life preservation; planning for sustainable agriculture; rural development programmes.

#### Unit: 4 Resource Planning Development and Management

Endowments; types of resources, exhaustive and replenishable resources development; utilization and conservation of national, technological and human resources; resource management, recycling of resources and resource equilibrium; water resource management, waste land management; rural industrialisation and use of non-conventional energy in rural development; major resource development programmes in India; case studies of resource development projects in agriculture, forestry, minerals, water, manpower, etc.

#### Unit: 5 Community Development and Participation

Community development, community development and rural planning; basic principles of self-help techniques and role of voluntary organisations in community development; appropriate technologies, innovation and entrepreneurship.

### **BP-352 Landscape Planning and Design**

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#### Unit: 1 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.

#### Unit: 2 Urban Landscape

Characteristics and components of open space patterns in towns and cities (traditional and contemporary) basic types: streets, squares, plazas, gardens, ghats and maidan, 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.

#### Unit: 3 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.

#### Unit: 4 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.

**Unit: 5 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.

**BP-353 Land Economics and Management**

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**Unit: 1 Introduction to Land Economics**

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

**Unit: 2 Development of Land and Real Property**

Process, cost of development, source of finance and financial calculation for private developer.

**Unit: 3 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.

**Unit: 4 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.

**Unit: 5 Technique of Cost Benefit Analysis**

Techniques of cost benefit analysis of urban development programme.

**BP-354 Elements of Settlement Sociology**

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**Unit: 1 Introduction**

Definition and scope of sociology; relationship between sociology and town planning.

**Unit: 2 Basic Concepts of Society**

Basic concepts, social groups, social institutions, social stratifications, orders and changes and social control.

**Unit: 3 Sociology of India**

Culture, language, religion, caste, rural community and its relationship with urban community, social division of urban and rural poor.

**Unit: 4 Urban and Industrial Sociology**

Urbanisation and urbanism; social aspects of urban-rural migration; concept of industrial society; social aspects of industrialisation; social problems of urban community; crime delinquency and violence.

**Unit: 5 Neighbourhood Concept**

Implications and limitations in Indian context.



**BP – 361 – BP 364 Elective – II**

**BP – 361 CAAD and Visualization**

This course intends to develop proficiency in CAAD and visualization

Unit: 1 Meaning of CAAD and importance in Architecture, software used in CAAD, introduction to visualization

Unit: 2 Preparation of drawing for visualization, understanding concepts of #D drawings

Unit: 3 Introduction to the modeling techniques using NURBS and surfaces

Unit: 4 Rendering, its concepts, material application, setting up lights, background and importing images

Unit: 5 Generating photo-realistic images and creation of slide of slide shows

**BP – 362 Valuation and Arbitration**

The objective of this subject is to equip the students with sufficient knowledge of valuation and arbitration

(Part A) Valuation

Unit: 1 Importance of valuation for rental, income/wealth tax, selling/ purchasing. Values, sinking fund, capitalized cost year purchase, methods of depreciation and valuation tables

Unit: 2 Mortgage/ lease, fixation of rent of private/ Govt., residential, commercial buildings etc.

Unit: 3 Different methods of valuation. Valuation reports, duties and responsibilities as registered government valuer

(Part B) Arbitration

Unit: 4 Role and qualities of an arbitrator. Arbitration act-1940 with amendment till date

Unit: 5 Arbitration with reference to competitions, valuation, contract, land disputes and legal implications.

**BP – 363 Site and Landscape Planning**

This course intends to develop an understanding of Site and landscape Planning to compliment design

Unit: 1 Introduction to site planning its scope and role

Environmental/ regional context in site planning and landscape design

Unit: 2 Access network, parking and service planning

Service layouts and trenching

Unit: 3 Factors effecting Site Planning and landscape design

Geological setup, Topography, Slope, Drainage network, Flora and fauna. Use of land development softwares

Unit: 4 Landscape constructions

Pavings, curbs, edgings, drains, trees, plants in paved areas, services, trenches, landscape furniture etc.



Ponds, pools, waterways and fountains

Unit: 5 Use of land development software

Design exercise incorporating all /part of the above

Note: Sessionals shall be in form of reports, drawings, models and examples

### **BP – 364 Disaster Management**

Unit: 1 Types of disaster, meanings and related definitions.

Unit: 2 Causes and effects of natural hazards

Unit: 3 Disaster profile of India.

Unit: 4 Disaster preparedness and response and rehabilitation.

Unit: 5 Roles and responsibilities of different agencies

### **BP-391 Urban Design and Conservation**

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Unit: 1 Introduction to Urban Design Theory

Relationship between architecture, urban design and planning; city as a three dimensional entity; study of volumes and open spaces at all levels; a brief historic review of the development of the urban design discipline and principles.

Unit: 2 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; Organisation 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.

Unit: 3 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; related issues for public intervention.

Unit: 4 Basic Principles of Conservation

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 techniques of urban conservation.

Unit: 5 Aspects of Urban Conservation

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.

### **BP-392 Planning and Management of Informal Sector**

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Unit: 1 Urban Poverty

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



**Unit: 2 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 organisations associated with provision of basic needs.

**Unit: 3 Alternative Approaches for Delivery of Basic Services to the Urban Poor**

Community planning approach, low cost alternatives and institutional reforms approach.

**Unit: 4 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.

**Unit: 5 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 organisations; existing management; their organisational set-up and limitations; planning and development of urban settlements in respect of the spontaneous growth; case studies from India and other developing countries.

**BP-393 Planning and Design Studio (Development Plan Preparation)**

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The study for this studio exercise shall be limited to the preparation of a comprehensive development plan of a small town; The programme may carry a predetermined focus such as planning for tourism, energy conservation, heritage conservation etc. The studio programme is designed to expose the student to:

Study and establish appropriate planning standards,

Techniques of population projection,

Identification of the data to be collected and the sources thereof,

Organising surveys and collecting socio-economic, traffic and other data,

Using selected computer software to analyse the data,

Projecting the future with different scenarios and identification of 'action areas' (i.e., specific problems related with housing, services, circulation, etc.),

Preparation and presentation of all relevant drawings and reports of complete comprehensive development plan proposal.

**BP –394 General Proficiency**

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General Proficiency is meant for developing co-curricular activities in individual student. By this they are encouraged to participate in ASP / NASP activities, NSS, NCC, Debates, Dramas, Paper presentations, Sports and Games etc. at Dept./College/ University level.



## **SEVENTH SEMESTER**

### **BP-401 Operations Research and Systems Analysis**

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**Unit: 1 Linear Programming Problems**

Introduction, mathematical formulation of the problem, solution methods and problems, graphical solution, simplex method; duality and post-optimality analysis.

**Unit: 2 Transportation Problems**

North-West corner rule, Vogel's approximation method, modified distribution method, transshipment problems, the assignment and the travelling salesman problem.

**Unit: 3 Queuing Systems**

General structure and operating characteristics, deterministic queuing model, probabilistic queuing models, Poisson-exponential single server model.

**Unit: 4 PERT and CPM Networks**

Rules of network construction, determination of critical path, earliest and latest schedules, slack and float, resource analysis and allocation.

**Unit: 5 System Simulation**

Systems concept, types of systems, system modelling, types of models, nature and process of simulation, Monte Carlo simulation, simulation of queuing systems, applications of simulation; computer application; computer packages of operations research models, spread sheet analysis, what-if? Simulation using various software packages, simulation languages.

### **BP-402 Planning Legislation**

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**Unit: 1 Concept of Law**

Sources of law (custom, legislation and precedent); meaning of the term of law, legislation, ordinance, bill, act, regulations and bye-laws; significance of law and its relationship to urban planning; benefits of statutory backing for planning schemes; eminent domain and police powers.

**Unit: 2 Indian Constitution**

Concepts and contents of Indian Constitution; provisions regarding property rights; evolution of planning legislation and overview of legal tools connected with urban planning and development; model town planning laws.

**Unit: 3 Land Acquisition Act**

Introduction to land acquisition act, 1984.

**Unit: 4 Case Studies Related to Land Acquisition Act.**

Case studies highlighting nature of contention, parties in dispute and the decisions in specific planning disputes.

**Unit: 5 Organisations for Plan Implementation**

Special purpose bodies for plan implementation such as urban/metropolitan development authorities, improvement trusts, water and sewerage boards, housing boards, slum improvement/clearance boards, transport undertakings; regional development boards.



### **BP-403 Environmental Planning**

Unit: 1 Introduction to Environmental planning, aims, objectives & Implementation. Introduction to State and National policies.

Use of various planning theories for environmental planning and their impact on environment.

Unit: 2 Issues related to Environment & ecology like, de - forestation, soil erosion, water logging and soil salinization. Scarcity of natural resources and exploitation of them for development. Planning for optimizing the use of natural resources, methods used like water harvesting, waste land management and minimizing use of fossil fuel etc.

Unit: 3 Environmental aspects with respect to tribal and rural areas. Problems of air & water pollution, industrial pollution and solid waste management in urban areas.

Unit: 4 Environmental impact & resources and its analysis. Frame work, statement prediction and assessment of impacts of air, water, noise, cultural and socio-economic environment. Methods of impact analysis, public participation, Environmental impact assessment and statements.

Unit: 5 Environmental protection agencies and legislation.

Environmental policies for various geographical regions.

NOTE: Sessional work shall consist of case studies / analytical reports / seminars and term paper.

These should be supported with computer applications.

### **BP-404 Remote Sensing and GIS**

Unit: 1 Basic remote sensing, platform, sensors, and introduction to sensors, basic principal & methods of photo interpretation and techniques of data collection through satellite data. Classification techniques using satellite data

Unit: 2 Digital image processing, enhancement techniques in urban information extraction

Unit: 3 Aerial photography as a tool for collection of data and preparation of maps, its application in planning and preparation for a project, orientation concept and methodology transformation and adjustment techniques.

Experiments in lab, Instruction for making overlays

Computation of photo scale

Orientation of a stereo pair under a mirror stereoscope

Recognition on aerial photograph of objects indicated on ground photographs

Detection of defined objects, Description and identification of objects

Use of auxiliary features for object identification

Systematic scanning of a photograph, and object identification

Identification of land use with a given classification

Monitoring urban changes, Mosaic preparation

Unit: 4 Base map preparation & elementary data analysis using satellite data

Experiments in lab, Instruction for making overlays

Classification preparation

Interpretation & delineation of various land use on satellite data products

Unit: 5 GIS techniques and their application in planning field

NOTE: Sessional work shall consist of term paper, small project formulation using satellite data and analytical report preparation through GIS, seminars



**BP 411 – BP 412 & BP 441 – BP 442 Elective – III**

**BP – 411 & BP – 441 Urban Energy Systems**

Unit: 1 Current energy systems, Alternative energy systems, Solar, Wind, Wave and Tide, Bicycle/Mechanical, Bio, Geo-Thermal.

Unit: 2 Changing Energy Consumption Patterns, Patterns in Human Settlement; Energy Management, Energy Technology appraisal criteria, Non environmental criteria :financial viability ,supply security ,wider economics.

Unit: 3 Key issues in Urban Energy Systems: Sustainability, Management, Planning, Engineering, Technology and Financing.

Unit: 4 Energy Fact Sheets: Traditional Fuels of Today and Yesterday, Nuclear Energy, Energy Use/Waste and Society, Consequences.

Unit: 5 Energy Environmental Interactions, Economic Considerations. World Energy and Challenge of Sustainability

**BP – 412 & BP – 442 Energy Efficient Planning**

This is advance course in area of energy conscious Architecture.

Unit: 1 Building design in response to various climates and its impact upon requirements of energy in building.

Unit: 2 Assessment of energy in buildings using computer software.

Unit: 3 Low energy strategies and guidelines.

Unit: 4 Non- conventional energy sources and system integrated building design.

Unit: 5 Building energy management system and energy audit of buildings using computer software.

**BP-443 Planning Information Systems**

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Unit: 1 Introduction

Definition of systems, systems hierarchy, nature of systems, nature of organisations and control systems; definition of information, value of information, handling of information, information flows and loops; information systems and systems design; Competitors in information systems; definition of data, file structure and Organisation, data manipulation, data bank and data administration.

Unit: 2 Information Systems

Planning information system; types and modes of operation, limitations and pre-conditions for using systems; data base management information systems; management of tabular data, spread sheets, introduction to statistical packages with advantages and limitations of each; municipal information system: definition, need, scope, limitations and introduction to related software.

Unit: 3 Geographic Information System

Introduction, components, benefits, data structure for GIS, thematic maps, map-data Organisation, goal setting and projecting needs and trends in GIS.



Unit: 4 Use Map

Introduction, configuration required, menus, general menu, practical exercises and case studies.

Unit: 5 Other Packages

Introduction to the maps, presenting thematic data, hardware requirements, practical exercise and case studies; introduction to digitization; hardware requirements, digitizing functions, practical exercise; introduction to latest trends-, ARC/INFO; ISROGIS, NICGIS, GPS/ GRAM

**BP-444 Planning and Design Studio (Block/Sub-regional Plan)**

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Understanding the role and relevance of regional planning; state of art, role of planning at district and sub district level, critical appraisal of district/ sub district plans.

Formulation of goals, objectives, methodology, identification of data sources, analysis of data available, survey and preparation of schedules.

Field work: visit to the field study area; conducting surveys, collection of data from secondary sources, sectorally and block wise.

Detailed data analysis, identification of potential thrust areas and development issues, both sectorally and block wise.

Appropriate alternate strategy planning, settlement development strategy and programmes.

Formulation of sectoral prioritisation and financial allocation (block wise); final recommendations for a district/sub district development plan.



## ***EIGHTH SEMESTER***

### **BP-451 Professional Practice**

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#### Unit: 1 Organisation, Scope and Scale of Charges

Aims and objectives of professional institutes, sister bodies; professional roles and responsibilities of planning consultants; professional ethics; responsibilities towards clients, fellow professionals and general public; scope of services for different projects like master plan for urban area, zonal/ district plan, sector/neighbourhood; layout, group housing schemes, commercial centres, industrial estates etc; consultancy agreements, and safeguards; fees and scales of professional charges, competitions and copyrights.

#### Unit: 2 Role of Planner

Planner's input as professional at various levels and organisations, 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 specialised studies related to planning.

#### Unit: 3 Valuation

Fundamentals of valuation, ownership of land, compound interest theory, calculating for present value, concepts of economic rents and social rents, property taxes, sinking fund, annuity, depreciation, valuation tables; legislative framework-rent control, land acquisition, easements and their effects on properties.

#### Unit: 4 Methods of Real Property Valuation

Income capitalisation methods, land and building method and other methods of valuation.

#### Unit: 5 Contract Documents and Project Formulation

Tenders, contracts, arbitration, schedule of rates for construction; materials, labour and equipment for land development, units and mode of measurements, rate analysis; formulations of project proposals and outline.

### **BP- 452 Project Planning, formulation and Appraisal**

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#### Unit: 1 Introduction to Project Management

Importance of project management; reasons for shortfall in its performance; scientific managements; life cycle of project.

#### Unit: 2 Project Planning Management

Methodology for project identification and formulation; detailed project report, and feasibility studies; techniques of financial appraisal, pay back period, IRR, DCF, NPV, CBR, social-cost benefit analysis.

#### Unit: 3 Pre-Implementation Planning Phase

Work break down structure; network analysis; CPM, PERT; resource levelling and allocation; time-cost trade off aspects;

#### Unit: 4 Project Implementation and Evaluation Phase

Organisation of project; matrix Organisation, task forces, project teams; monitor and control of project.

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### **BP-453 Public Finance**

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#### Unit: 1 Taxation

Principles, direct and indirect taxation, tax incidences; general, specific taxes; delegation of tax powers.

#### Unit: 2 Fees and Charges

Quid-pre-que tariff structure and gross subsidisation, cost recovery.

#### Unit: 3 Borrowing

Sources of borrowing; government, market, institutional; long term development finance, ways and means of advance, debt rescheduling repayment.

#### Unit: 4 Inter-Governmental Fiscal Relations

Grants; general and specific; assigned and shared taxes, plan assistance, fiscal equalisation. and finance commission, state supervision and control over municipal finance.

#### Unit: 5 Public Expenditure

Public expenditure; principles, revenue and capital, project appraisal, budgetary techniques including budgeting for capital projects.

### **BP-454 Urban Management**

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#### Unit: 1 Introduction to Management

Principles and practices, techniques and approaches; their application in urban management.

#### Unit: 2 Legal Framework

Development control mechanisms; property laws governing transfer, letting, leasing and mortgaging.

#### Unit: 3 Urban Management

Institutional and organisational framework , existing institutional and organisational setting for urban management in India; distribution of responsibilities and activities among different levels as government and their special purpose bodies in the urban field; significance of organisational framework.

#### Unit: 4 Organisations Involved in Urban Management

Local government; types, Organisation (deliberative and executive wings), powers and functions, resources, state supervision control and conditions of their working; improvement trust : organisations, scope of their powers and functions, and their working; city development authorities: organisations, scope of their powers and functions, resources, and their working.

#### Unit: 5 Coordination of Participation

Inter-organisation relations and coordination at the local level, alternative to multiplicity of authorities-various models, their advantages and limitations; citizen participation in urban development and management.

### **BP 461 – BP 463 & BP 491 – BP 493 Elective – IV**

### **BP-461 & BP – 491 Political Systems and Planning**

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#### Unit: 1 Decision Making

Decision-making; definition, features, factors, essentials and hindrances in sound decision-making; structure of decisions 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.

**Unit: 2 Leadership**

Planner's functions as a leader, urban development manager, public bureaucrat, policy analyst and social reformer, approaches to study leadership; trait-approach, behavioural approach and situational approach; role of the planner in the decision-making process; generalists vs. specialist.

**Unit: 3 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 environment policies; important elements of a sound motivational system; integration versus disintegration; coordination and cooperation; centralisation and decentralisation; single versus plural supervision; elements and types of organisations; theories of Organisation; scientific management theory; bureaucratic theory, classic theory, human relations theory, behavioural approach and systems approach.

**Unit: 4 Political Systems, Social Systems and Planning**

Democracy and planning, socialism and planning, fascism and planning; tribal society, peasant society, industrial society, spatial segregation in India.

**Unit: 5 Conflicts**

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; examples from the other parts of the world highlighting situations where such problems have been minimized.

**BP-462 & BP – 492 Urban and Regional Planning**

Unit: 1 Basic components of urban areas and Regions.

Unit: 2 Role and working of Urban and Regional planning at different levels like national level, state level, district level etc.

Unit: 3 Different planning theories and models.

Unit: 4 Socio-cultural, economic planning, land use planning etc. General principles and working. Planning norms and development norms for urban and Regional approaches / techniques of development for existing areas, renewal schemes and development.

Unit: 5 Detailed survey and preparation of questionnaire for land use, socio-economic, Transportation planning etc.

**BP-463 & BP – 493 Sustainable Planning**

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Unit: 1 Introduction to the ideas, issues and concepts of sustainable Architecture, global environment and the built environment, principles of environmentally and ecologically supportive architecture

Unit: 2 Study of sustainable architecture, use of energy, materials, health and global environment as related to the construction and operation of buildings

Unit: 3 Sustainable and conservation practices – water conservation, sewerage treatment, solid waste treatment, economics and management



Unit: 4 Low energy design, hybrid systems, modelling and simulation of energy systems, integration of PV and wind systems in the building, wind solar and other non conventional energy systems, solar thermal applications for heating and cooling, electricity generation in buildings

Unit: 5 Case studies on specific contemporary sustainable architecture.

Note : The Sessional will be oriented towards live case studies and modelling

### **BP –494 General Proficiency**

General Proficiency is meant for developing co-curricular activities in individual student. By this they are encouraged to participate in ASP / NASP activities, NSS, NCC, Debates, Dramas, Paper presentations, Sports and Games etc. at Dept./College/ University level.

### **BP –498 Thesis / Dissertation**

The thesis project shall include an individual's work on Planning topic selected by the students and approved by the department.

work programme and thesis manual shall be supplied by the department.

Each student is required to prepare terminal project on a subject concerning urban, rural or regional development as approved by the Department. The terminal project will provide an opportunity to the student to synthesize the knowledge and skills acquired through the learning of various theories and practices during the course.