

**Model Scheme of Examinations - For Undergraduate Programme of Bachelor of Planning**

First Year : First Semester									
Subject Code	Subject	Teaching Hours			Maximum Marks			Credits	ESE Duration in Hrs
		L	S/T	Total	ESE		Total		
BPLN0101	Planning Studio - I (Graphics and Presentation Techniques)	2	9	11	-	VV	100	4	-
BPLN0102	Fundamentals of Urban & Regional Planning	4	0	4	WR	-	100	2	3
BPLN0103	Fundamentals of Building Structures	3	0	3	WR	-	100	1	3
BPLN0104	Materials and Principles of Constructions	3	0	3	WR	-	100	1	3
BPLN0105	Statistical and Quantitative Methods in Planning I	3	0	3	WR	-	100	1	3
BPLN0106	Basic computer applications and technical report writing	3	0	3	-	VV	100	1.5	3
BPLN0107	Basic Architectural Design	1	3	4	-	VV	100	2	3
	Total	<b>19</b>	<b>12</b>	<b>31</b>				<b>12.5</b>	

First Year : Second Semester									
Subject Code	Subject	Teaching Hours			Maximum Marks			Credits	ESE Duration in Hrs
		L	S/T	Total	ESE		Total		
BPLN0201	Planning Studio - II (Graphics and Presentation Techniques)	2	9	11	-	VV	100	4	-
BPLN0202	Elements of Economics	3	0	3	WR	-	100	1	3
BPLN0203	Surveying and Photogrammetry	2	2	4	WR	-	100	1.5	3
BPLN0204	Specifications, Estimation and Valuation	3	0	3	WR	-	100	1	3
BPLN0205	Statistical and Quantitative Methods in Planning II	2	1	3	WR	-	100	1.5	3
BPLN0206	Evolution of Aesthetics, Culture, Technology	3	0	3	WR	-	100	1	3
BPLN0207	Techniques of Planning - I	2	1	3	WR	-	100	1.5	3
BPLN0208	Applied Geology	2	0	2	WR	-	100	1	3
	Total	<b>19</b>	<b>13</b>	<b>30</b>				<b>12.5</b>	

## **FIRST YEAR: FIRST SEMESTER**

### **BPLN-0101: Planning Studio - I (Graphics and Presentation Techniques)**

#### **Unit 1: Drawing Equipments and Mediums**

Introduction to drawing equipments and mediums, Importance of graphics and visual presentations.

#### **Unit 2: Geometric Projections**

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

#### **Unit 3: Use of Shapes**

Use of points, lines, polygons; Horizontal, vertical, diagonal, curved lines; Line thicknesses and intensities; Texture, color and tone in materials and graphics; Shapes and forms.

#### **Unit 4: Concepts of Scales and Proportions**

Sketching of human figures, activities, natural and man-made elements; Concept of scales and proportions; Graphic scales; Lettering.

#### **Unit 5: Measured Drawings**

Architectural Building Drawings - Plans, Elevations, and Sections. Measured drawings for simple buildings.

### **BPLN-0102: Fundamentals of Urban and Regional Planning**

#### **Unit 1: Introduction to Planning Discipline**

Defining planning as a discipline, multidisciplinary nature, role of a planner, fields of planning- Urban, regional, environmental, transport and infrastructure.

#### **Unit 2: Definitions and Bases of Planning**

Various definitions of town and country planning; Goals and objectives of planning; Components of planning; Benefits of planning; Arguments for and against planning. Economics and social planning as bases of physical planning.

**Types of plans:** Definition of development plan; Types of development plans: master plan, city development plan, structure plan, district plan, action area plan, subject plan.

**Hierarchy of plans:** regional plan, sub-regional plan; Sector plans and spatial plans; Town planning schemes.

#### **Unit 3: Evolution of Settlements**

- The City in History. Settlement size, pattern and structure as a function of socio-cultural, economic, military and religious factors. Variations in civilizations- Egyptian, Mesopotamian, Greek, Roman. Town planning in Medieval times and in Renaissance Europe.

- Origin and evolution of civic planning; Impacts of Industrial Revolution on town and regional planning

#### **Unit 4: Planning in Post Industrial Revolution Era**

- Concepts of garden City, City beautiful, Linear city etc., contributions of all leading masters in planning.
- Socio-economic impacts of growth of urban areas; rural-urban migration. Impact of technology on urban forms. Urban structure and form- land use distribution.
- Types of City Plans: Comprehensive Planning, Master plans, Structure Plans, Zonal Plans.

#### **Unit 5: Theories of Urbanization**

Theories of urbanization including Concentric Zone Theory; Sector Theory; Multiple Nuclei Theory and other latest theories; Land Use and Land Value. Theory of William Alonso on location and Land use; City as an organism: a physical entity, social entity and political entity.

### **BPLN-0103: Fundamentals of Building Structures**

#### **Unit 1: Forces on Buildings**

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

#### **Unit 2: Components of buildings**

Foundations, walls and roofing systems. Introduction to structural systems of buildings. Such as load bearing and framed. Soil structure and interaction with buildings.

#### **Unit 3: Beams and Columns**

Beams and bending, various types of beams and their behavior. Columns and struts, long and short column.

#### **Unit 4: RCC Structures**

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

#### **Unit 5: Steel Structures**

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

## **BPLN-0104: Materials and Principles of Construction**

### **Unit 1: Introduction to Structural Materials**

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

### **Unit 2: Materials for Finishes**

Internal and external finishes. Cladding, paints and varnishes, Stucco plaster

### **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 well 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. Introduction to NBC

### **Unit 5: Service Lines and Networks**

Layout and construction of roads, culverts, flyovers, sewer and storm water drain, water supply lines, service duct under the road. Electrical and Telecom networks.

## **BPLN-0105: Statistical and Quantitative Methods in Planning 1**

### **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/ use of presentation software.

### **Unit: 3 Statistical Methods**

Raw data, frequency distribution, selecting number of classes, class limits, curves, cumulative frequency distribution, 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 co-efficient, methods of concurrent deviation, co-efficient of rank correlation, partial correlation analysis and multiple correlation

### **Unit: 5 Probability and Sample distribution**

Introduction, addition rule, conditional probability, multiplication rule, random variables and probability distribution, mathematical expectation; Binomial distribution and normal distribution

Note: Assignments shall be done using software packages for graphic presentations and software packages for statistical analysis such as Statistical Programme for Social Sciences (SPSS) genstat, systat and statistica and its application for statistical methods.

## **BPLN-0106: Basic Computer Applications and Technical Report Writing**

### **Unit 1: Types and Classification of Reports**

Types of reports, difference between technical, scientific, legal and other types of communications; specific characteristics of writing technical reports.

### **Unit 2: Reporting communication**

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

### **Unit 3: Computer Application**

Data processing, word processing, presentation software, spread sheets and data bases such as MS office applications (word, excel, excess, power-point)

### **Unit 4: Format and Elements of Reports**

Preface, acknowledgements, contents, indexing, key word indexing, introduction, body terminal section, appendices, references; Use of Word Processing software; Literature surveys: Use of libraries, knowledge of indexing and available reference materials

### **Unit 5: Business Communication**

Special type of writing: articles and manuals; Planning and preparation of technical articles for publications; Popular articles; Formal letters and specifications: Business and official letters, styles and formats; Requests for specifications and other types of business enquiries; Replies to bidding for tenders and conduct of meetings; Agendas and minutes of official records and meetings

## **BPLN-0107: Basic Architectural Design**

### **Unit 1: Anthropometries and Layouts of Rooms**

Anthropometries, Human Activity and Space Use; Furniture Layout of a room; Building circulation/ flow diagrams; Concepts of Space, Form and Function

### **Unit 2: Building Design, Factors and concepts**

Factors and concepts related to building design - Climate, Site Characteristics, Land Form, Visual Elements, Behavioral Factors, Space Utilization.

### **Unit 3: Architectural Space Standards**

Introduction to Architectural Space Standards, Preparation of Design Briefs; Design of simple Residential, Commercial, Institutional Buildings.

### **Unit 4: Rendering and Project Presentation**

Appreciation of simple Buildings and Drawings; Rendering of Architectural Drawings; Project presentation modes through physical models, oral, digital and manual sketches

### **Unit 5: Appreciation and Presentation**

Appreciation and design of Logo and Insignia of geometric merits and format of presentation drawings

## **FIRST YEAR: SECOND SEMESTER**

### **BPLN-0201: Planning Studio - II (Graphics and Presentation Techniques)**

#### **Unit 1: Graphic Presentation**

Graphic presentation of statistical data

#### **Unit 2: Base Maps and Key Maps**

Preparation of Base Maps at the levels of Site, Area, Zone, City, Region, etc; Preparation of Key Maps.

#### **Unit 3: Drawings and Photographs**

Composition of Drawings, Proportions of Lettering and Line thickness, Standard symbols, Line-styles, Colour-coding; Legend, Drawing Formats; Appreciation of Thematic Maps of various levels of Planning; Introduction to Photography, Basic Principles, Composition for Architectural Building Photographs and Planning! Site Photographs.

#### **Unit 4: Communication Skills**

Graphic presentation and communication skills; Use of Power Point and Multi-Media Projections.

#### **Unit 5: Appreciation Studies**

Appreciation studies of Residential, Commercial, Institutional areas in small urban and/ or rural settlements

### **BPLN-0202: Elements of Economics**

#### **Unit 1: Definition and Scope of Economics**

Central problems of economics; micro and macroeconomic decisions; use of economics in planning

#### **Unit 2: Theory of Demand and Supply**

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

#### **Unit 3: Theory of Firm Production**

Perfect and imperfect market types, market demand and supply; pricing under different market conditions, theory of production; factors of production, costs, scale of production, and economies of scale

#### **Unit 4: Concept of Income, Employment and Money**

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

#### **Unit 5: Introduction to Urban and Regional Economics**

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

## **BPLN-0203: Surveying and Photogrammetry**

### **Unit 1: Fundamentals of Surveying**

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

### **Unit 2: Chain Surveying and Compass Surveying**

Definition, application, advantages and disadvantages, principles; Instruments used, steps in chain survey; Definition of framework of survey, survey lines, survey stations, base line, tie line, check line; Ranging and chaining a survey line, off-sets - use and types; Errors and obstacles in chaining; Plotting chain survey to prepare a plan with practical examples. Definition of compass surveying, traversing, types of traversing, applications, advantages and disadvantages, principles and instruments used in compass surveying; Concept of bearings, meridian and angles, designation of bearing, fore bearing and back bearing, local attraction; Plotting of compass survey data to prepare a plan of a small area

### **Unit 3: Plain Table Surveying and Computations of Areas**

Definition, application, advantages and disadvantages of plane table survey; Instruments used, working operation, methods of plane table survey; Preparation of map of a small area with plane table survey. General methods of determining area; Instrument used and their principles for computing area; Determination of area from the plotted map with different methods and comparing them; Use of Digital Planimeter

### **Unit 4: Levelling and Contouring**

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

### **Unit 5: Photogrammetry**

Photogrammetry as an Alternative Tool for Surveying; Introduction to Aerial Remote Sensing and Aerial Photographs, Classification; Principles of Stereoscopic Vision; Basic instruments Stereo-pair, Pocket and Mirror Stereoscopes, Parallax Bars; Principles of Photogrammetry, Measurement of Heights and Depths; Introduction to Digital Photogrammetry; Introduction to GPS; Introduction to Total Stations; Applications in urban and regional planning; Laboratory Exercises.

## **BPLN-0204: Specifications, Estimation and Valuation**

### **Unit 1: Introduction**

Why the knowledge of quantity surveying and specifications is necessary for planners? Significance and methods of writing specifications, classifications of specifications, sources of specifications; Types and methods of cost estimation for different types of projects, rates and sources of rates for different components of planning projects; Cost Index

### **Unit 2: General Specifications**

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

### **Unit 3: Detailed Specifications**

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

### **Unit 4: Estimation**

Cost estimation and determination of rates for different types of housing; Cost estimation and determination of rates of works involved in the infrastructure services (roads, water supply, sewer systems etc.); Costing procedure for different land use categories, development works, interest on investment, and phasing; Preparation of detailed Development Costs of a Planning Schemes for an approximate population of 5,000 as per Norms and standards

### **Unit 5: Valuation**

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

## **BPLN-0205: Statistical and Quantitative Methods in Planning - II**

### **Unit 1: Linear Regression Analysis**

Linear and non-linear regression, lines of regression, coefficient of regression; Applications in planning

### **Unit 2: Time Series Analysis**

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

### **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; Applications in planning.

### **Unit 4: Estimation and Testing of Hypothesis**

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

### **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; Applications in planning



## **BPLN-0206: Evolution of Aesthetics, Culture and Technology**

### **Unit 1: Fundamentals of Arts and Aesthetics**

Importance of creative and visual arts; Art as a medium of communication; Art as a means of social expression; Human habitat as an artistic expression

### **Unit 2: Fundamentals of Aesthetics**

Concepts of beauty and ugliness; Classical theories of aesthetics; Relationship of aesthetics with other cultural values; Concepts of scale, space, form and structure; Concepts of time as a dimension of built form; Role of climate in evolution of settlement form

### **Unit 3: Role of Culture and Technology in Planning**

Definition and symbols of culture; Transmission of culture; Cultural traits of ethnic groups and their expression in built form; Aesthetics of mixed culture and global culture; Cultural pollution; Role of technology in changing arts, culture, aesthetics, built form and structure of human habitat

### **Unit 4: Aesthetics, Culture and Technology in India**

Aesthetics, culture and advancement of technology in ancient India and their impact on planning of settlements; Planning principles of the Manasara Treatise and Indus Valley Civilization. Aesthetics, culture and advancement of technology during the Mughal and British periods and their impact on planning of human settlements; Aesthetics, culture and advancement of technology in independent India and their impact on planning of human settlements

### **Unit 5: Asian, European and American Aesthetics, Culture and Technology**

Evolution of aesthetics, culture and technology in Europe and North America and their impact on city planning principles; Greek cities, Roman cities, European medieval cities; Planning during renaissance and baroque period. Evolution of aesthetics, culture and technology and their impact on city planning principles in America, Africa, Asia, the Middle East

## **BPLN-0207: Techniques of Planning I**

### **Unit 1: Techniques of Preparing Base Maps**

Choice of appropriate scale for region and settlement level plans; town development plans, zonal development plans, layout plans; graphical, linear and areal scales; contents of base maps at various scales, notations - basic disciplines of maps; Measurement of Areas.

### **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 scale 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; Data requirement for various types of regional plans; Techniques for conducting regional surveys

#### **Unit 4: Techniques of Graphic Presentation of Statistical Data**

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; basis disciplines of illustration and tables.

#### **Unit 5: Techniques of Graphic Presentation of Spatial Data**

Land use classification, coding and analysis; residential and non-residential density patterns and analysis; colour, black and white presentation techniques; basis disciplines of illustration; Presentation of spatial data, analysis and proposals.

### **BPLN-0208: Applied Geology and Hydrology**

#### **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, soil formation, landslides, sources and causes of crystal displacements, types, characters and effects, instability of hill slopes, prevention.

#### **Unit 3: Earthquakes**

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 geo-technical 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.