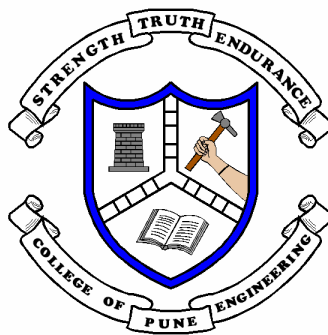


COLLEGE OF ENGINEERING, PUNE
WELESLY ROAD, SHIVAJINAGAR, PUNE 41005



DEGREE COURSE IN BACHLOR OF TECHNOLOGY
(PLANNING)

DEPARTMENT OF CIVIL ENGINEERING
COLLEGE OF ENGINEERING, PUNE

JULY 2012

DEPARTMENT OF CIVIL ENGINEERING

Town Planning Section

CURRICULAM STRUCTURE OF B.TECH PLANNING (2012-2013)

Model Scheme of Exams

Ist SEMESTER						
S.No.	Course Code	Subject Title	Contact Hours			Credits (A)
			L	T	P/Stu.	
02	CE102	Fundamentals of Building Structures	3	--	--	3
03	CE103	Materials and Principles of Construction	2	--	1	3
04	MA104	Mathematics and Statistics in Planning-I	3	--	--	3
06	BP106	Basic Architectural Design	1	--	3	2
07	BP107	Planning and Design Lab I (Graphical and Presentation Techniques)	--	--	10	5
TOTAL			9	--	14	16
TOTAL CONTACT HOURS PER WEEK			23			
IInd SEMESTER						
S.No.	Course Code	Subject Title	Contact Hours			Credits (B)
			L	T	P/Stu.	
01	BP111	Fundamentals of Urban and Regional Planning	3	--	--	3
02	CE112	Surveying and Photogrammetry	2	--	2	3
03	CE113	Specifications, Estimation and Valuation	2	1	--	3
04	MA114	Mathematic and Statistics for Planning -II	3	--	--	3
05	HU115	Evolution of Aesthetic, Culture and Technology	1	1	--	2
06	BP116	Techniques of Planning -I	3	--	--	3
07	CE117	Applied Geology and Hydrology	1	1	--	2
08	CH105	Basic Chemistry	3	--	--	3
09	BP118	Planning and Design Lab -II (Graphics and Presentation Techniques)	--	--	10	5
TOTAL			18	3	12	27
TOTAL CONTACT HOURS PER WEEK			33			
IIIrd SEMESTER						

S.No.	Course Code	Subject Title	Contact Hours			Credits (C)
			L	T	P/Stu.	
01	MA201	Mathematics and Statistics for Planning-III	3	--	--	3
02	BP202	Planning Theory -I	3	--	--	3
03	HU203	Settlement Geography and Urbanization	3	--	--	3
04	BP204	Techniques of Planning -II	3	--	--	3
05	BP205	Computer Aided Design (CAD) in Planning	1	2	--	2
06	BP206	Traffic and Transportation Planning -I	3	--	--	3
07	BP207	Planning and Design Lab - III (Neighborhoods and Site Planning)	--	--	10	5
01	PH101	Basic Physics	3	--	--	3
TOTAL			19	2	10	25
TOTAL CONTACT HOURS PER WEEK			31			

This Structure is only for Entry Level batch (2012-2013)

CE102- FUNDAMENTALS OF BUILDING STRUCTURES

Teaching Scheme

Lectures: 3hrs/week

Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks

End Sem 50 Marks

Unit 1: Compression and Tension

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

Unit 2: Components

Different types of foundation, Analysis of Trusses soil structure interaction and columns and struts, short and long columns

Unit 3: Beams

Beams and bending, various types of beams and their behavior

Unit 4: Design Principles

Design principles of RCC beams and slabs. Construction system: reinforced concrete, pre-stressed concrete and prefab system and modular co-ordination

Unit 5: High Rise Structures

Load action and high rise buildings, various structural systems for high rise buildings

CE103- MATERIALS AND PRINCIPLES OF CONSTRUCTIONS

Teaching Scheme

Lectures: 2hrs/week
Practical: 1 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1: Introduction to Building Materials and Finishes

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

Unit 2: Structural Uses of Timber

Timber used as lintels, post and trusses.

Unit 3: Principles of Construction and Building Elements

Foundations, Footings, D.P.C., flooring, sills, lintel, roofing, parapets, coping, cladding expansion joints, waterproofing of roofs, external wall sections with details, beams, columns, slabs, retaining walls, etc.

Unit 4: Site Development

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

Unit 5: Principles on of Service Lines and Networks

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

MA104- MATHEMATICS AND STATISTICS FOR PLANNING I

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1: Data Collection

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

Unit 2: Basic 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 ogives, 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. Statistical Programme for Social Sciences (SPSS) genstat and statistica and its application for statistical methods.

Unit 4: Time Series Analysis

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

Unit 5: Probability Theory and Probability Distribution

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

BP106- BASIC ARCHITECTURE DESIGN

Teaching Scheme

Lectures: 1hrs/week
Practical: 3 hrs/week

Examination Schemes

Internal Assessment: 50
External Jury: 50

Unit 1: Anthropometrics, Layouts of Rooms and Circulations

Anthropometrics, Human Activity and Space Use; Furniture Layout of a room; Building circulation/ flow diagrams;

Unit 2: Concepts of Space, Building Design and Space Utilization

Concepts of Space, Form and Function; 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: Architectural Drawings

Architectural Drawings - Plans, Elevations, Sections; Measure Drawings of Simple Monumental / Contemporary Buildings; Appreciation of simple Buildings and Drawings;

Unit 5: Rendering and Project Presentation

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

BP107- PLANNING AND DESIGN LAB I (Graphical and Presentation Techniques)

Teaching Scheme

Lectures: 0hrs/week
Practical: 10 hrs/week

Examination Schemes

Internal Assessment: 100
External Jury: 100

Unit 1: Drawing Equipments and Mediums

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

Unit 2: Shapes and Forms

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 3: Concepts of Scales and Proportions

Sketching of human figures, activities, natural and man-made elements; Concept of scales and proportions; Graphic scales; Free hand lettering; Jali patterns;

Unit 4: Perspective Projections

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

Unit 5: Appreciation and Presentation

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

BP111- FUNDAMENTALS OF URBAN AND REGIONAL PLANNING

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1 : Definitions and Rationales 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

Unit 2: Foundations of Planning

Orthodoxies of planning including the Lamps of Planning; Sustainability and rationality in planning; Components of sustainable urban and regional development; Defining what counts as planning knowledge: various sources of planning knowledge, various forms of planning knowledge; Reasoning and its various forms in planning; Space, place and location

Unit 3: Development Plans and Development Regulations

Definition of development plan; Types of development plans: master plan, city development plan, structure plan, district plan, action area plan, subject plan, town planning scheme, regional plan, sub-regional plan; Planning Advisory Group report and the UDPFI Guidelines; Sector plans and spatial plans; Defining development and development control regulations, types of development control; Implications of violations of development control regulations; Conforming and Nonconforming land uses; Compatible and non-compatible land uses, LULU and NIMBY

Unit 4: Governance of Planning

Local government in India; District Planning Committees and Metropolitan Planning Committees; Introduction to Internationalization and globalization of planning: meanings and forms of globalization; Characteristics of a global city; Principles for planning for a global city;

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; City as an organism: a physical entity, social entity and political entity

CE112- SURVEYNG AND PHOTOGRAMMETRY

Teaching Scheme

Lectures: 2hrs/week
Practical: 2 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

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 - Stereopair, 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.

CE113- SPECIFICATIONS, ESTIMATION AND VALUATION

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

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

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

MA114- MATHEMATICS AND STATISTICS FOR PLANNING II

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1: Correlation and Regression Analysis

Degree of correlation, Scatter Diagram, correlation analysis, correlation co-efficient, co-efficient of rank correlation, partial correlation analysis and multiple correlation, simple Linear and nonlinear regression, lines of regression, coefficient of regression; Multiple Regression Analysis; Applications in planning

Unit 2: Statistical Inference

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; two tailed and one tailed tests, large and small sample tests for mean and proportion; Applications in planning.

Unit 3: Chi-Square Test and Analysis of Variance (ANOVA)

Chi-square distribution: applications of chi-square distribution; test of goodness of fit; ANOVA distribution; Applications in planning

Unit 4: Mathematical Programming Techniques

Mathematical Programming models, linear programming problems, transportation problems, assignment problems, applications in planning

Unit 5: Decision Theory

Decision making under conditions of certainty, uncertainty, and conditions of risk, decision trees, pay off matrix, applications in planning

HU115- EVOLUTION OF AESTHETICS, CULTURE AND TECHNOLOGY

Teaching Scheme

Lectures: 2hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

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

BP116-TECHNIQUES OF PLANNING I

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

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.

CE117-APPLIED GEOLOGY AND HYDROLOGY

Teaching Scheme

Lectures/Tutorial: 2hrs/week
Practical: 0 hrs/week

Examination Schemes

Class Assignment- 50 Marks

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

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 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 foundations for roads and bridges, buildings 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.

CH105 ENGINEERING CHEMISTRY-I

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1

Atomic Structure

Definition of Atom, Atom-mass, charge, location, Atomic number, Atomic mass number, Isotopes and Isobars, Bohr's theory, Hund's rule, Definition and types of Valency, Octet rule, Duplet rule

Unit 2

Electrochemistry

Definition of ion, Ionization and electrolytic dissociation, Arrhenius theory of ionization, Electrolysis- Conductors, insulators dielectrics, electrolyte, non-electrolyte, electrolytic cell, electrodes.

Mechanism of Electrolysis- Cathode and Anode, concept of reduction potential and oxidation potential. Electrochemical cells and batteries

Unit 3

Metals and Alloys

3.1 Metals: Occurrence of Metals, Definition of metallurgy, Mineral, Ore, Gangue, Flux and Slag, Mechanical properties of metal such as Hardness, Toughness, Ductility, Malleability, Tensile strength, Machinability, Weldability, Forging, Soldering, Castability. Stages of extraction of metals from its ores. Physical properties and applications of commonly used metals

3.2 Alloys: Definition and purpose of Alloys. Preparation methods, Ferrous and Non-ferrous alloys, Composition, properties and Applications of Alnico, Duralumin, Dutch metal, German Silver/Nickel Silver, Gun Metal, Monel metal, Wood's metal

Unit 4

Non-Metallic materials

4.1 Plastics: Definition of Plastics, Formation of plastics by addition and condensation polymerization by giving example of polyethylene and Bakelite plastic respectively, Types of plastic, Thermosoftening and thermosetting plastics.

4.2 Rubber: Natural rubber- Processing and drawbacks, Vulcanization. Synthetic Rubber

4.3 Thermal Insulating materials: Definition and characteristics of thermal insulators. Preparation, properties and application of thermocole and glasswool. Properties and applications of asbestos, cork

Unit 5

Environmental Effects

5.1 Pollution and Air pollution: Definition of pollution and pollutant, Types of pollution-Air and Water pollution

Pollution: Types of pollutants, sources and effects such as Gases, Particulates, Radioactive gases, Control of various Pollution. Deforestation and their effects and control measures, Ozone depletion and Green House Effects

5.2 Types of waste such as Domestic waste, Industrial waste (Physical and Biological characters). Concept and Significance of BOD, COD and their treatment; biomedical waste and treatment.

BP107- PLANNING AND DESIGN LAB I (Graphical and Presentation Techniques)

Teaching Scheme

Lectures: 0hrs/week
Practical: 10 hrs/week

Examination Schemes

Internal Assessment: 100
External Jury: 100

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: Composition of Drawings and Photographs

Composition of Drawings, Proportions of Lettering and Line thickness, Standard symbols, Linestyles, 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

MA201- MATHEMATICS AND STATISTICS FOR PLANNING III

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

UNIT 1:Probability and Data Sampling

Probability: Types of Probability, Random Variable, Probability Function, Sample space. Events, elementary events, algebra of events. Axioms of probability. Inclusion-Exclusion formula.

Sampling: Purpose and Principle of Sampling, Methods of Sampling, Size of Sample, Merits and Limitations of sampling, Sampling Distribution, stratified sampling, systematic sampling, sampling and non-sampling errors, planning and organization of sample surveys.

UNIT 2 :Bays Theorem and Design of Experiments

Bay's theorem (statement); Binomial, Poisson and Normal distribution.

Design of experiments-Analysis of variance for one way, two and three way classifications, Principles of experimental designs, completely randomized design, Randomized block design, Latin square design, missing plot techniques (one missing observation)

UNIT 3:Univariate, Bivariate and Multivariate data analysis

Types of data and statistical analysis procedures: Univariate, Bivariate and Multivariate (only overview); Hypothesis Testing procedure based on Z, t, χ^2 and F-test and one-way ANOVA.

UNIT 4

Coefficient of determination; Development of confidence intervals; Estimation of simple and exponential growth rates; Forecasting with OLS; Estimation of Cobb Douglas production function

UNIT 4:Linear Programming & Hypothesis Testing

Linear Programming: methods for maximizing, methods for minimizing, etc., Input-Output Analysis, Hypothesis Testing: The Chi (χ^2) Test, The Z-Score Test, The T-Test, Test for Proportion

MA202- PLANNING THEORY I

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1: Defining Planning Theory

Definitions of theory in general; Definitions of planning theory including theory of planning, theory in planning and theory about planning; Definition of paradigm and its various stages of development by Kuhn; Significance of planning theory; Espoused theories and theories in use

Unit 2: Participation and Planning

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

Unit 3: Sustainability, Rationality and Globalization

Sustainability and rationality in planning; Components of sustainable urban and regional development; Globalization, internationalization, modernism and postmodernism debate; Pragmatism in planning; Regime theory and urban politics

Unit 4: Theories of City Development

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

Unit 5: Planning, Implementation and Evaluation

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

HU203- SETTLEMENT GEOGRAPHY AND URBANIZATION

Teaching Scheme

Lectures: 3hrs/week

Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks

End Sem 50 Marks

Unit: 1 Introduction

Need for study of settlement geography; definition of settlement; ranking of towns; site and situation patterns; settlement morphology.

Unit: 2 Spatial Distribution of Settlements

Settlement in regional; context; spatial models of location, size and spacing of settlements; Central Place Theory; Characteristic of rural – urban fringe; rural– urban continuum; inter – urban inequalities; Interaction among settlements; Gravity model, classification of settlements. Types of regions, delineation of regions, city region, structure of city region, area of influence and dominance, shadow regions Trickle down effect and Trickle down effects, rural – urban fringe, its structure and growth.

Unit: 3 Urban Land Use Studies

Classification of land use in urban area; analysis of location and structure and models of growth patterns of CBD, industrial areas and residential areas; intra – urban inequalities. Typology of urban perception, impact of socio – economic status of people on the image of a city; components forming the image of a city; land marks, edges, etc.

Unit 4: Urbanization in India

A brief history of urbanization in India; Mughal and British influences of India cities; postindependence urbanization; urbanization process as influenced by socio-cultural, political, economic and administrative factors; definition of urban centers, concepts of rural-urban continuum and dichotomy; census definition of urban places town, cities, town groups, urban agglomeration, standard urban area metropolis, megalopolis, etc; functional classification of urban places.

Unit 5: Settlement Systems and Role of Urban Area

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

BP204- TECHNIQUES OF PLANNING II

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit: 1: Methods of Analysis

Methods of analysis of Socio-Economic and Physical data; Use of techniques of Location Quotient, Coefficient of Localization; Locational attributes of activity and population; Techniques for understanding structure of urban areas, land values and density patterns;

Unit 2: Spatial Standards

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

Unit 3: Regional Surveys

Concept and need for Regional Planning, Region, Fact or Fallacy; Formal, Functional, Planning Regions; Regional delineation techniques, Factor analysis, Cluster analysis; Flow analysis; Case studies in regional delineation.

Unit 4: Plan Preparation Techniques

Setting of Goals and Objectives; Methodologies for preparation of urban/ regional development plans, master plans, structure plan and strategy plan techniques; plan implementation techniques; public participation and plan implementation; techniques of urban renewal and central area redevelopment;
Contents of a Master Plan, Regional Plan, etc.

Unit: 5 Introduction to Advanced Techniques

Thresholds analysis, retail location and industrial location analysis; intervening opportunity models; Linear programming; Simulation, Gravity Models; Applications in planning.

BP205- COMPUTER AIDED DESIGNING (CAD) IN PLANNING

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1: Drafting in CAD

Need for Computer Applications in Planning; Need for automated design and drafting; Tools for automated designs and drafting; Elements of spatial data in CAD - Arcs, lines, rectangles, polylines, points, circles, donuts, layers, grids, snaps and object snaps, etc.

Unit 2: Editing and Controlling Display in CAD

Move, scale, copy, offset, change, trim, extend, mirror, divide, measure, array, break, hatch, block, zoom, regen, view, pan, fonts, etc.

Unit 3: Case Studies of Lay-out Plans

Paper maps, digital layout maps, on screen digitization; 2D and 3D conversion, perspective view, walk through of layout.

Unit 4: Case Study of a Regional Plan

Base map evaluation, scanning the maps, digitization, scale conversion, symbolization, layer control, plotting.

Unit 5: Limitations

Limitations of Computer Aided Design and Drafting in Planning; Non-linking of spatial and attribute data; Need for GIS packages for handling spatial and attribute data.

BP206- TRAFFIC AND TRANSPORTATION PLANNING I

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1: Transport System and its Development

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

Unit 2: Road Capacity

Concept of PCU and level of service, capacity of uninterrupted flow conditions, factors affecting capacity and level of service; capacity of rural and urban roads, capacity at intersections.

Unit 3: Traffic Survey and Studies

Traffic Volume Count, origin destination survey, speed and delay study, parking surveys, road network inventory, accident study - need, design of survey proforma, methods of conducting surveys, analysis and interpretation

Unit 4: Transport Facility Design

Roads: Road hierarchy, design control and criteria, geometric design elements, sight distance and control of access; at grade and grade separated intersections

Parking: Parking space norms and standards, design standards for on-street and off-street parking facilities.

Pedestrian Facilities: Capacity guidelines for at-grade and grade separated facilities, design considerations

Cycling Facilities: Capacity guidelines and design considerations for cycle tracks

Public Transport / Para Transit Facilities: Design standards for bus stops, auto rickshaw, taxi, cycle-rickshaw stands

Unit 5: Traffic Management and Control

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

BP207- PLANNING AND DESIGN LAB III(Neighborhood and Sit Planning)

Teaching Scheme

Lectures: 0hrs/week
Practical: 10 hrs/week

Examination Schemes

Internal Jury: 100
External Jury: 100

Unit 1: Designing, Preparation and Presentation of Drawings

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: Planning Working Drawings

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

Unit 3: Site Analysis and Conceptual Approach to Site Planning

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

Unit 4: Layouts and Area Analysis

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

Unit 5: Costing and Preparation of Model

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

PH101- BAISCS PHYSICS

Teaching Scheme

Lectures: 3hrs/week
Practical: 0 hrs/week

Examination Schemes

Mid Sem- 30, Assignment- 20 Marks
End Sem 50 Marks

Unit 1 General Mechanics(5)

- i) Concept of force field, potential energy, work done;
- ii) work energy theorem, types of equilibrium,
- iii) motion in central force field, properties of central force field, its equation of motion,
- iv) planetary motion in solar system.

Unit 2 Waves motion & Optics(6)

- i) Types of waves, general equation of traveling wave
- ii) Superposition principle, formation of stationary waves (with derivation).
- iii) Light as an EM wave, graphical representation of EM wave, Superposition principle in case of light wave,
- iv) Huygen's Principle, Young's double slit experiment,
- v) interference of light due to thin film (uniform thickness), condition for darkness and brightness.

Unit 3 Electrostatics (6)

- i) Coulomb's law in vector form, the electric field,
- ii) Continuous charge distribution (Line, Surface & Volume)
- iii) Divergence of E, application of Gauss's law (simple 2 D problems)
- iv) The curl of E (Faraday's Law), the concept of electric potential V,
- v) Potential (V) due to continuous charge distribution

Unit 4 Magnetostatics(4)

- i) Steady currents (line current, surface current, volume current) & current densities
- ii) Magnetic field due to steady currents (Biot-Savart's law),
- iii) divergence and curl of B,
- iv) Statement of Ampere's Law (with simple examples)

Unit 5 Thermodynamics(4)

- i) Heat as a form of energy (Joule's constant), Types of Systems.
- ii) Zeroth's law, first law & its mathematical statement
- iii) Second law and concept of entropy, third law,
- iv) Reversible and irreversible processes with examples

Unit 6 Modern physics(5)

- i) Drawbacks of classical mechanics, Planck's quantum hypothesis.
- ii) Dual nature of matter, De-Broglie's hypothesis, light as a particle (Compton's experiment)
- iii) De-Broglie's wavelength, Heisenberg's uncertainty principle (position and momentum).
- iv) Wave function, its properties, conditions and its physical significance.