

MODEL CURRICULUM

For

UNDERGRADUATE PROGRAMME - BACHELOR'S DEGREE IN PLANNING



ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(A Statutory Body of Government of India)
Indira Gandhi Sports Complex, I. P. Estate, NEW DELHI - 110002

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INTRODUCTION

The first undergraduate programme in planning was offered by the School of Planning and Architecture, New Delhi, in 1989 in response to the growing demand for qualified planners in consonance with the accelerating pace of urbanization within the country and related urban and regional problems that required urgent attention. The programme is now offered at two more places in the country viz. Guru Ramdas School of Planning at Guru Nanak Dev University, Amritsar; and Jawaharlal Nehru Technological University, Hyderabad.

The model curriculum prepared for the programme is designed to impart such basic skills that would help students later in their careers to serve in various professional capacities in planning, development and management agencies in the public sector as well as private consultancy organizations. During the programme, the students are also equipped with the knowledge of basic theories, techniques, and design concepts so that they can assume their assigned professional roles as members of multi-disciplinary teams for survey, analysis and plan preparation be it in the area of urban planning, development and management regional planning, housing, transport planning, infrastructure planning, environmental planning, design, conservation or in other related disciplines.

The course curriculum of this programme is spread over eight semesters during which time students attain proficiency in designing and managing projects of all magnitudes from micro level unit design to the macro level regional development planning supplemented with 12 weeks of off-campus professional work in a planning office. The programme culminates in the eighth semester in a thesis presentation whereby a student is trained in research methodologies.

Initially this curriculum was prepared after a series of discussions with various professionals and academicians, and based on the feedback from planning schools where the programme has been running for quite some time. The process of preparing this curriculum started with a meeting of experts held on 13 February, 2003 at the AICTE headquarters under the Chairmanship of Prof. C.K. Kokate, Vice-Chancellor, Kakatiya University. In this meeting, the co-ordinators for different courses in Engineering, Architecture, Town Planning, Pharmacy and Management, etc; were invited. The team of co-ordinators for drafting Model Curriculum for undergraduate programme in Town Planning comprised of Prof. J.H. Ansari, Director, School of Planning and Architecture, New Delhi and Prof. A.N. Sachithanandan, Dean, MEASI Academy of Architecture, Chennai. The co-ordinators first met at the AICTE headquarters at New Delhi, when they drafted the basic structure of the Model Curriculum. Comments on this basic structure were invited from various academicians. The co-ordinators again met at Chennai and discussed with a group of experts comprising academicians, professionals, and town planning practitioners about the subjects that needed to be incorporated in the Model Curriculum.

Simultaneously on the basis of the discussions held at the meeting, a list of the experts was prepared who were invited to write syllabi for different subjects to be included in the Model Curriculum. These experts included Prof. J. H. Ansari, Prof. B. R. Batra, Prof. S.D. Joardar, Dr. Mahavir, Prof. J. Narayanaswamy, Prof. S.P. Sekar, Dr. Ashok Kumar, Shri Rabidyuti Biswas, Shri Ashish Chatterjee, Shri Rajasekara Pandian, and Ms. Poonam Prakash.

In the next stage, based on the inputs received from various experts, a draft Model Curriculum was prepared and sent to various experts and academicians for comments. Feedbacks were again obtained from other Planning Schools, which offer undergraduate education in planning. After incorporating the comments, the same was discussed in a meeting at the AICTE Headquarters on 9th March, 2004. The meeting was attended by Prof. M. Chandra, Advisor (PC), Prof. J.H. Ansari, Prof. A.N. Sachithanandan, Prof. S.D. Joardar, Prof. Kavas Kapadia, Dr. S.K. Kulshrestha, Prof. A.K. Sharma, Prof. H.B. Singh and Prof. T.M. Vinodkumar and Dr. Mahavir. During this meeting comments received from other experts as well as those received through postal communications, were discussed, deliberated and incorporated in the Draft.

In the first meeting of All India Board of Town and Country Planning, held on 24th January, 2007 in AICTE HQs, New Delhi under the Chairmanship of Shri D.S. Meshram, a Task Force was constituted comprising of Prof. A.N. Sachithanandan as convener and Prof. Swarup Singh, Dr. Mahavir and Prof. Padmavathi as members to consolidate and collate earlier efforts and to finalize the draft curriculum for the approval of AIB-TCP and AICTE.

The final Draft of Curriculum was discussed in the 2nd meeting of AIB-TCP held on 18th March, 2008 in which certain suggestions received from the members were deliberated. The inputs were also received from Dr. Ashok Kumar, Dr. Mayank Mathur, and Dr. Sanjay Gupta of SPA, New Delhi besides, the draft was also discussed with Shri S.S. Mathur, Secretary General, Institute of Town Planners, India to make it more adoptable and acceptable by various School of Planning. Finally the draft was again discussed in the 3rd meeting of the AIB-TCP held on 7th May, 2008; and after threadbare deliberations and discussions the Curriculum was approved by the AIB-TCP for acceptance of AICTE.

The key feature of the course curriculum is its multi-disciplinary nature drawing from the fields of architecture, engineering, geography, economics, sociology, management, law, etc; besides a spectrum of courses from mainstream planning. Adequate emphasis has been given to practicals / labs where the students will have opportunity to learn by doing. Similarly, practical training has been provided at two places, with a provision of public presentation in the form of seminars. Training, oral, visual and written communication skills form one of the most important aspects of the course curriculum.

While the course curriculum ensures sufficient exposure required for a fully equipped planner at the undergraduate level, limited number of electives has been introduced to prepare the students for further studies at the postgraduate level. Subjects like 'Real Estate Planning and Management'; 'Geo-Informatics for Planning'; and 'Disaster Risk Mitigation and Management'; on one hand and 'Human Values in Planning' on the other have been introduced to cover most recent developments in the field as well as to inculcate the feeling of responsibility towards the self and society at large.

After including all the suggestions and comments of the concerned stakeholders, the AICTE adopts this Model Curriculum for undergraduate planning degree program. The AICTE expects that various planning schools will adopt this curriculum to suit their specific local requirements and framework of the universities to which they may be affiliated.

SEMESTERWISE SUBJECTS OFFERED

First Year: First Semester

Sl. No.	Subject
1.1	Fundamentals of Urban and Regional Planning
1.2	Fundamentals of Building Structures
1.3	Materials and Principles of Construction
1.4	Statistical and Quantitative Methods in Planning - I
1.5	Technical Report Writing and Research Methodology
1.6	Basic Architectural Design
1.7	Planning and Design Lab - I (Graphics and Presentation Techniques)

First Year: Second Semester

Sl. No.	Subject
2.1	Elements of Economics
2.2	Surveying and Photogrammetry
2.3	Specifications, Estimation and Valuation
2.4	Statistical and Quantitative Methods in Planning - II
2.5	Evolution of Aesthetics, Culture and Technology
2.6	Techniques of Planning - I
2.7	Applied Geology and Hydrology
2.8	Planning and Design Lab - II (Graphics and Presentation Techniques)

Second Year: Third Semester

Sl. No.	Subject
3.1	Planning Theory - I
3.2	Settlement Geography
3.3	Techniques of Planning - II
3.4	Computer Aided Design (CAD) in Planning
3.5	Demography and Urbanization
3.6	Traffic and Transportation Planning - I
3.7	Planning and Design Lab - III (Neighborhoods and Site Planning)

Second Year: Fourth Semester

Sl. No.	Subject
4.1	Planning Theory - II
4.2	Planning Practice - I
4.3	Traffic and Transportation Planning - II
4.4	Ecology, Environment and Resource Development and Management
4.5	Housing and Community Planning
4.6	Settlement Sociology
4.7	Planning and Design Lab - IV (Transportation Planning)

Third Year: Fifth Semester

Sl. No.	Subject
5.1	Real Estate Planning and Management
5.2	Planning and Management of Utilities and Services
5.3	Planning Legislation
5.4	Landscape Planning and Design
5.5	Geo-Informatics for Planning
5.6	Sustainable Urban Development
5.7	Planning and Design Lab - V (Area Planning)
5.8	Training Seminar - I

Third Year: Sixth Semester

Sl. No.	Subject
6.1	Urban Management - I
6.2	Urban Renewal and Conservation
6.3	Project Formulation, Appraisal and Management
6.4	Introduction to Urban Design
6.5	Planning and Management of Informal Sector
6.6	GIS for Planning
6.7	Planning and Design Lab - VI (Urban Development Plan)

Fourth Year: Seventh Semester

Sl. No.	Subject
7.1	Introduction to Regional Planning
7.2	Urban Governance
7.3	Urban Finance
7.4	Disaster Risk Mitigation & Management
7.5	Electives: <ul style="list-style-type: none">- Infrastructure Planning, Development and Management- Rural Development and Management
7.6	Metropolitan Planning, Development and Management
7.7	Planning and Design Lab - VII (Regional Planning)
7.8	Training Seminar - II

Fourth Year: Eighth Semester

Sl. No.	Subject
8.1	Urban Management - II
8.2	Planning Practice - II
8.3	Human Values in Planning
8.4	Electives: <ul style="list-style-type: none">- Environmental Impact Assessment- PPP in Urban Environmental Services
8.5	Planning Thesis

MODEL SCHEME OF EXAMINATIONS**First Year: First Semester**

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
1.1	Fundamentals of Urban and Regional Planning	4	0	4	100	50	00	150
1.2	Fundamentals of Building Structures	3	0	3	50	50	00	100
1.3	Materials and Principles of Construction	2	0	2	50	50	00	100
1.4	Statistical and Quantitative Methods in Planning - I	3	0	3	50	50	00	100
1.5	Technical Report Writing and Research Methodology	3	0	3	00	100	00	100
1.6	Basic Architectural Design	1	3	4	00	50	50	100
1.7	Planning and Design Lab - I (Graphics and Presentation Techniques)	0	11	11	00	200	200	400
	Total	16	14	30	250	550	250	1050

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

First Year: Second Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
2.1	Elements of Economics	3	0	3	50	50	00	100
2.2	Surveying and Photogrammetry	1	2	3	50	50	00	100
2.3	Specifications, Estimation and Valuation	3	0	3	50	50	00	100
2.4	Statistical and Quantitative Methods in Planning - II	3	0	3	50	50	00	100
2.5	Evolution of Aesthetics, Culture and Technology	3	1	4	50	50	00	100
2.6	Techniques of Planning - I	3	0	3	50	50	00	100
2.7	Applied Geology and Hydrology	2	0	2	00	50	00	50
2.8	Planning and Design Lab - II (Graphics and Presentation Techniques)	0	11	11	00	200	200	400
	Total	18	14	32	300	550	200	1050

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Second Year: Third Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
3.1	Planning Theory - I	3	1	4	100	50	00	150
3.2	Settlement Geography	3	0	3	50	50	00	100
3.3	Techniques of Planning - II	3	0	3	50	50	00	100
3.4	Computer Aided Design (CAD) in Planning	1	2	3	00	50	50	100
3.5	Demography and Urbanization	3	0	3	50	50	00	100
3.6	Traffic and Transportation Planning - I	3	0	3	50	50	00	100
3.7	Planning and Design Lab - III (Neighborhoods and Site Planning)	0	11	11	00	200	200	400
	Total	16	14	30	300	500	250	1050

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Second Year: Fourth Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
4.1	Planning Theory - II	4	0	4	100	50	00	150
4.2	Planning Practice - I	3	0	3	50	50	00	100
4.3	Traffic and Transportation Planning - II	3	0	3	50	50	00	100
4.4	Ecology, Environment and Resource Development and Management	3	0	3	50	50	00	100
4.5	Housing and Community Planning	3	0	3	50	50	00	100
4.6	Settlement Sociology	3	0	3	50	50	00	100
4.7	Planning and Design Lab - IV (Transportation Planning)	0	11	11	00	200	200	400
	Total	19	11	30	350	500	200	1050

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Note: Each student shall undertake training in planning (or related field) during summer vacation. The exact period and place of training will be decided in consultation with the co-ordinator in charge of training.

Third Year: Fifth Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
5.1	Real Estate Planning and Management	3	0	3	50	50	00	100
5.2	Planning and Management of Utilities and Services	3	0	3	50	50	00	100
5.3	Planning Legislation	3	0	3	50	50	00	100
5.4	Landscape Planning and Design	3	0	3	50	50	00	100
5.5	Geo-Informatics for Planning	1	2	3	50	50	00	100
5.6	Sustainable Urban Development	3	0	3	50	50	00	100
5.7	Planning and Design Lab - V (Area Planning)	0	11	11	00	200	200	400
5.8	Training Seminar - I	0	0	0	00	50	00	50
	Total	13	16	29	300	550	200	1050

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Third Year: Sixth Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
6.1	Urban Management - I	3	0	3	50	50	00	100
6.2	Urban Renewal and Conservation	3	0	3	50	50	00	100
6.3	Project Formulation, Appraisal and Management	3	0	3	50	50	00	100
6.4	Introduction to Urban Design	3	0	3	50	50	00	100
6.5	Planning and Management of Informal Sector	1	2	3	50	50	00	100
6.6	GIS for Planning	1	2	3	50	50	00	100
6.7	Planning and Design Lab - VI (Urban Development Plan)	0	11	11	00	200	200	400
	Total	14	15	29	300	500	200	1000

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Note: Each student shall undertake training in planning (or related field) during summer vacation. The exact period and place of training will be decided in consultation with the co-ordinator in charge of training.

Forth Year: Seventh Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
7.1	Introduction to Regional Planning	3	0	3	50	50	00	100
7.2	Urban Governance	3	0	3	50	50	00	100
7.3	Urban Finance	3	0	3	50	50	00	100
7.4	Disaster Risk Mitigation and Management	1	2	3	50	50	00	100
7.5	Electives: - Infrastructure Planning, Development and Management - Rural Development and Management	3	0	3	50	50	00	100
7.6	Metropolitan Planning, Development and Management	3	0	3	50	50	00	100
7.7	Planning and Design Lab - VII (Regional Planning)	0	11	11	00	200	200	400
7.8	Training Seminar - II	0	0	0	00	50	00	50
	Total	13	16	29	300	550	200	1050

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Forth Year: Eighth Semester

Sl. No.	Subject	Teaching Hours			Maximum Marks			
		L	P	Total	ESE	IA	EJ	Total
8.1	Urban Management - II	3	0	3	50	50	00	100
8.2	Planning Practice - II	3	0	3	50	50	00	100
8.3	Human Values in Planning	3	0	3	50	50	00	100
8.4	Electives - Environmental Impact Assessment - PPP in Urban Environmental Services	3	0	3	50	50	00	100
8.5	Planning Thesis	0	18	18	00	400	200	600
	Total	12	18	30	200	600	200	1000

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

Total Semester-wise Teaching Hours and Maximum Marks at a Glance

Semester	Teaching Hours			Maximum Marks			
	L	P	Total	ESE	IA	EJ	Total
First Semester	16	14	30	250	550	250	1050
Second Semester	18	14	32	300	550	200	1050
Third Semester	16	14	30	300	500	250	1050
Fourth Semester	19	11	30	350	500	200	1050
Fifth Semester	13	16	29	300	550	200	1050
Sixth Semester	14	15	29	300	500	200	1000
Seventh Semester	13	16	29	300	550	200	1050
Eighth Semester	12	18	30	200	600	200	1000
Total	121	118	239	2300	4300	1700	8300

L Lectures

P Practical or Laboratory

ESE End Semester Examination

IA Internal Assessment

EJ External Jury

SUBJECTWISE COURSE CONTENT

FIRST YEAR: FIRST SEMESTER

1.1 Fundamentals of Urban and Regional Planning

Lecture Hours per Week	4
Practical Hours per Week	0
End Semester Examination	100
Internal Assessment	50
External Jury	00
Total Marks	150

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 Non-conforming 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

1.2 Fundamentals of Building Structures

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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

1.3 Materials and Principles of Construction

Lecture Hours per Week	2
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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.

1.4 Statistical and Quantitative Methods in Planning - I

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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 statisticia 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

1.5 Technical Report Writing and Research Methodology

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	00
Internal Assessment	100
External Jury	00
Total Marks	100

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

Unit 2: 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 4: Special Type of Writing

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

Unit 5: Research Methodology

Intuition and research; Scientific research, need for scientific approach to research; Research methods; Hypotheses, testing of hypotheses; Reporting of research; Research in planning

1.6 Basic Architectural Design

Lecture Hours per Week	1
Practical Hours per Week	3
End Semester Examination	00
Internal Assessment	50
External Jury	50
Total Marks	100

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.

1.7 Planning and Design Lab - I (Graphics and Presentation Techniques)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

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

FIRST YEAR: SECOND SEMESTER

2.1 Elements of Economics

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Definition and Scope of Economics

Central problems of economics; micro and macro economic 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.

2.2 Surveying and Photogrammetry

Lecture Hours per Week	1
Practical Hours per Week	2
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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.

2.3 Specifications, Estimation and Valuation

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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

2.4 Statistical and Quantitative Methods in Planning - II

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Corelation and Regression Analysis

Degree of corelation, Scaffer Diagram, corelation analysis, corelation co-efficient, co-efficient of rank corelation, partial corelation analysis and multiple corelation, simple Linear and non-linear 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

2.5 Evolution of Aesthetics, Culture and Technology

Lecture Hours per Week	3
Practical Hours per Week	1
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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

2.6 Techniques of Planning - I

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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.

2.7 Applied Geology and Hydrology

Lecture Hours per Week	2
Practical Hours per Week	0
End Semester Examination	00
Internal Assessment	50
External Jury	00
Total Marks	50

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.

2.8 Planning and Design Lab - II (Graphics and Presentation Techniques)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

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, 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

SECOND YEAR: THIRD SEMESTER

3.1 Planning Theory - I

Lecture Hours per Week	3
Practical Hours per Week	1
End Semester Examination	100
Internal Assessment	50
External Jury	00
Total Marks	150

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

3.2 Settlement Geography

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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.

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

Unit: 4 Image of the City

Typology of urban perception, impact of socio - economic status of people on the image of a city; components forming the image of a city; land marks, edges, etc.

Unit: 5 Regions

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.

3.3 Techniques of Planning - II

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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 re-development; 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.

3.4 Computer Aided Design (CAD) in Planning

Lecture Hours per Week	1
Practical Hours per Week	2
End Semester Examination	00
Internal Assessment	50
External Jury	50
Total Marks	100

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.

3.5 Demography and Urbanization

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1 : Study of Population

Demographic variables: fertility, mortality, migration; evolution of population study, contribution of Malthus; mortality-trends, biological and social factors and mortality-gender, race, social structure, life style, social status, occupation etc; measures of mortality-crude and age-specific death rates; infant mortality, adjusted or standardized death rates; neonatal mortality rate; fertility-fertility trends, fertility and social and biological behavior; differential fertility, ethnic groups, 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; methods of measuring volumes of migration; direct and indirect measures; effect of migration of composition of population.

Unit 2: Study of Demography

Source of demographic data; Census of India and its role as a data warehouse; population structure and composition - age sex composition, sex ratio, dependency ratio, child-woman ratio; measures of age-sex structure, age-sex pyramid, population composition; marital status, caste, region, literacy level, etc; life table techniques; techniques in preparing life table, abridged life table; population estimation, projection and population forecasting; basic cohorts survival model, inter regional cohorts survival model.

Unit 3: Urbanization in India

A brief history of urbanization in India; Mughal and British influences of India cities; post-independence urbanization; urbanization process as influenced by socio-cultural, political, economic and administrative factors; definition of urban 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 4: 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

Unit 5: Policies and Strategies for Directing Urbanization Trends in India

Over view of world urbanization, National Urbanization policy, basic issues in urbanization policy; role of national and state level policies; five year plans, latest attempts at urbanization policy formulation in the country; salient features of the report of the National Commission of Urbanization

3.6 Traffic and Transportation Planning - I

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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.

3.7 Planning and Design Lab - III (Neighborhood and Site Planning)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

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

SECOND YEAR: FOURTH SEMESTER

4.1 Planning Theory - II

Lecture Hours per Week	4
Practical Hours per Week	0
End Semester Examination	100
Internal Assessment	50
External Jury	00
Total Marks	150

Unit 1: Scientific Rationalism and Planning

Defining instrumental rationality; Systems view of planning with a focus on contributions of J.B. McLoughlin and others; Chief characteristics of Comprehensive Rational Planning Model and implications for planning practice; Systemic change

Unit 2: Advocacy Planning, Pluralism and Equity Planning

Meaning, historical background and purposes of Advocacy Planning Model; Main features of Advocacy Planning Model; Relevance for planning practice; Equity and its various definitions; Major components of the Equity Planning Model; Implications on the role of planners in planning practice

Unit 3: Political Economy Theories and the City

Defining the term political economy; Role of the state in planning; Contributions of David Harvey, Manuel Castells and others; Richard Foglesong and the property contradiction

Unit 4: Collaborative and Communicative Planning

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

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

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

4.2 Planning Practice – I

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Framing Planning Policies

Role of Town and country planning organization at central level and town and country planning department at state level. Actors framing public planning policies; Influences of various stakeholders on policy formulation; Implementation of public policies

Unit 2: Development Authorities

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

Unit 3: Development and Development Regulations

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

Unit 4: Coordination in Planning Practice

Meaning and types of co-ordination; Mechanisms of coordination; Case examples of coordination from planning practice

Unit 5: Privatization of Planning Practice

History of privatization of planning; Special Economic Zones; Retail sector developments; Infrastructure development by the private sector such as Metro, etc.

Note: This course will be delivered by practitioners having considerable experience in planning practice.

4.3 Traffic and Transportation Planning - II

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Urban Structure and Transport System

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

Unit 2: Comprehensive Transport Planning

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

Unit 3: Economic Evaluation

Economic appraisal of transport projects, techniques for estimating direct and indirect road user costs and benefits, value of travel time.

Unit 4: Transport and Environment

Traffic noise - factors affecting noise, noise abatement measures, standards; air pollution - factors affecting air pollution levels, abatement measures, standards; Traffic Safety- accident reporting and recording systems, factors affecting road safety; Transport Planning for Target groups - Children, adults, handicapped and women; Norms and Guidelines for highway landscape; Street lighting type - standards and design considerations.

Unit 5: Transport Policy and Management

Review of national, state and local level transport policies and their relevance in spatial and economic planning; pricing and funding of transport systems; energy and environment implications in transport; existing organizational and legal framework, transport co-ordination; Transport System Management (TSM) Plans

4.4 Ecology, Environment and Resource Development and Management

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction

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

Unit 2: Ecosystem and its Relevance to Environment

Resources and human settlements impact of advanced agricultural methods, urbanization and industrialization on nature; urban ecosystem approach evolution and significance; soil, water, land, vegetation and solar, biomas, wind, hydro energy resources; settlement planning and energy conservation; 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 analysis required to evolve ecological parameters. Planning for environmentally sensitive areas.

Unit 4: Environmental Impact Studies

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

Unit 5: Environmental Policies

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

4.5 Housing and Community Planning

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction

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

Unit 2: Assessing Housing

Existing Housing Statistics; definitions; urban and rural housing statistics; Introduction to concepts of Housing Shortage, Housing Need, quantitative and qualitative aspects of housing; Housing Demand - Understanding current methods of demand assessment; Knowledge of data sources and their use and interpretation; census, NSSO and other data; Limitations of existing methods of assessments.

Unit 3: Housing Development Process

Understanding of factors affecting residential location, theoretical knowledge of ecological, neo-classical, institutional approach to housing; Housing subsystems and their characteristics: formal and non-formal housing; Process of Public and private sector housing development process; policy context, actors and their interrelationships; Inner city housing, Slums, Squatter housing, Unauthorized Housing; Role of different institutions in housing; International agencies, NGOs, State, Financing Organizations, Private developers, co-operatives.

Unit 4: Housing Standards and Design

Factors determining residential densities; Densities, costs and development control regulations; Housing designs parameters and their relationship to costs; Housing design and climate; Housing for disaster prone areas. Communities; its characteristics and housing; socio-economic implication of slums, clearance/ improvement of slum; sites and services schemes, squatter upgrading, incremental approach

Unit 5: Housing Policy Analyses

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

4.6 Settlement Sociology

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Understanding Sociology

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

Unit 2: Sociological Perspective and Organizing Social Life

Functionalist perspective, Conflict perspective, Internationalist perspective; Culture of space and cultural ecology; Social structure and social control; Stratification and social inequality; Social mobility and Social defiance

Unit 3: Social Institutions

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

Unit 4: Community Development

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

Unit 5: Gender and Development

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

4.7 Planning and Design Lab - IV (Transportation Planning)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

Unit 1: Classification of Roads

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

Unit 2: Types of Transport Surveys

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

Unit 3: Road Geometrics and Surveys

Road geometrics and road components, traffic volume, origin destination, spot speed, speed and delay, parking and pedestrian;

Unit 4: Road Layouts

Design and preparation of layout for road intersections, rotaries and signalized intersections

Unit 5: Area Circulation Plan

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

Note: Each student shall undertake training and planning (or related) during summer vacation. The exact period and place of training will be decided in consultation with the co-ordinator in charge of training

THIRD YEAR: FIFTH SEMESTER

5.1 Real Estate Planning and Management

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Land

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: Developments of Land and Real Property

Process, cost of development, source of finance, and financial calculation for real estate 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; Techniques of cost benefit analysis of urban development programme.

Unit 5: Case Studies

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

5.2 Planning and Management of Utilities and Services

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction, Basic Concepts and Theories

Role of physical planner in planning of utilities and services, objectives of utilities and services planning and its implications for public health and environmental protection. Familiarizing to CPHEEO manual and guidance

Unit 2: Storm Water System

Definition of Hydrology, classification, hydrological cycle, urban water cycle; Types precipitation, measurement of precipitation, intensity-duration-frequency relationships, rainfall formula, rainfall maps, significance of interpretation and presentation of rain fall data; Surface water run off, hydrograph, measurement of discharge for small and big rivers, rational method for estimating run off, unit hydrograph and its application, definition of watershed; Flood frequencies, flood protection measures in urban areas. Estimating storm run-off, run-off co-efficient, rainfall intensity, time of concentration; Gravity flow, hydraulic gradient line, Manning's formula and nomographs, 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 and computation procedure.

Unit 3: Water Supply Systems

Surface and ground water sources, quality and quantity, location of sources and water intakes, area requirements of the components of water intakes; Water requirement for different land uses, factors affecting water demand, per capita requirement and its relationship with population sizes, variation of water consumption; seasonal & hourly, peak factor; demand of water for fire fighting; Water treatment system, location and space requirements; Components of water distribution systems, water storage location, capacity, fire fighting components, fire hydrants location, spacing, pressure requirement in pipe; Pumps types, efficiency, head loss, pump selection criteria, site selection and space requirements for pump house; Planning of water supply system, organizations and their jurisdictions, basic design guide line and layout of water supply distribution system; Financing water supply system, public and private partnership of providing water; Legal aspects

and government policy for urban and rural water supply. Case study discussion on innovative methods and successful urban water supply system; Significance and methods and advantages of water harvesting system Design of water harvesting systems; Government initiatives for water harvesting system and case study discussion

Unit 4: Sanitation and Sewer Systems

Methods of sanitations, advantages and limitations; On-site detention, design procedure for on-site detention, Off-site and on-site technology up gradation; Low cost appropriate technologies for sanitation; Quantity of sewage, standards for Indian cities; Sanitary sewer system network and layout, data needs and procedure of planning; Sewer appurtenances; sewer lift station, sewer pumping and forced main manholes; Sewage disposal methods and their advantages and disadvantages, location criteria and capacity; Case study of innovative approaches of sewage disposal in urban area; Approaches for financing and cost recovery for sewer system.

Unit 5: Solid Waste Management

Solid waste management for Indian cities, issues and database, quantity of solid waste and its character; Methods of solid waste managements, collection and transportation, disposal of solid waste; Land filling and composting, pre and post treatment; Indore and Bangalore methods, incineration, pyrolysis and recycling park; Area requirements, location and cost aspects of different methods of solid waste disposal systems; Community participation and involvement of Non-Governmental Organizations or NGOs in efficient solid waste management.

5.3 Planning Legislation

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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 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: Laws and Acts for Planning and Development

Introduction, scope and relevance of various laws and acts relevant to planning; Model Town and Country Planning Acts, Development Authorities Act, 73rd and 74th Constitution Amendment Acts; Municipal Acts, Environmental and Pollution Control Acts, etc.; Case studies.

Unit 4: Land Acquisition Act

Introduction to Land Acquisition Act, 1984, Historical background, need, advantages, limitations; Relevance in today's context; Case studies highlighting nature of contention, parties in dispute and the decisions in specific planning dispute.

Unit 5: Organizations for Plan Implementation

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

5.4 Landscape Planning and Design

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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 *maidans*, public parks at district, local and neighborhood 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; Introduction to landscape ecology, cultural landscapes.

5.5 Geo-Informatics for Planning

Lecture Hours per Week	1
Practical Hours per Week	2
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Remote Sensing

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

Unit 2: Photo Interpretation

Aerial Photo-Interpretation, Qualitative and Quantitative Elements of Photo-Interpretation; Satellite Remote sensing, Geo-Stationary and Sun-Synchronous Satellites, Principles of Electro-Magnetic Radiations, Resolutions; Introduction to Digital Image Processing; Salient Features of Popular Remote Sensing Satellites; Applications in Planning; Laboratory Exercises

Unit 3: Planning Information Systems

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

Unit 4: Human Settlements and Planning Information Systems

Human Settlements' Information Needs, Scales and Levels, Pre-Conditions for Using Planning Information Systems; Introduction to various Planning Information Systems

Unit 5: Planning Information Systems in India

Planning Information Systems -NNRMS, NUIS, National Urban Observatory, Municipal Information Systems, Land Information Systems, Cadastre Systems; Applications and Limitations; Tools for Spatial Data Handling, Introduction to GISs

5.6 Sustainable Urban Development

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Concept and Issues

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

Unit 2: Methods and Techniques

Application of ecological principles in sustainability: energy and resource cycles, food webs, ecological pyramids and evolution and succession of natural ecosystems; Carrying Capacity based planning: concept, parameters and indicator measures, models and case studies in urban and regional development; Environmental Impact and Strategic Environmental Assessment for urban areas; Ecological Footprint Analysis of cities; Sustainable Lifestyle Assessment and behavioral modifications at household levels.

Unit 3: Land, and Energy Resources

Land capability and suitability analysis in location and planning of urban land uses; implications of urban form, density, land use pattern and transportation system in land and energy conservation

Unit 4: Role of Water

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

Unit 5: Air Quality & Solid Waste Management

Sources, types and effects of air pollution and solid waste disposal in cities, urban industrial processes and land use and transportation implications in air and solid waste pollution; norms, standards, laws, organizations and policies in urban air quality control and solid waste management; examples of best practices.

5.7 Planning and Design Lab - V (Area Planning)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

Unit 1: Approaches to Plan Making

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

Unit 2: Relationship among Plans

Relationship of higher order plans with lower order plans

Unit 3: Framework for Zonal Plans

The approach to developing the area/ zonal plan within the framework of Master Plan

Unit 4: Planning Standards

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

Unit 5: Zonal Plans / Area Plans

Detailing of specific sites in the proposed Zonal Plans / Area Plans, covering different land uses

5.8 Training-Seminar - I

Lecture Hours per Week	0
Practical Hours per Week	0
End Semester Examination	00
Internal Assessment	50
External Jury	00
Total Marks	50

Each student shall undertake Training in a planning (or related) office during summer vacation between the Fourth and Fifth semester. The period of Training will be six weeks. The exact period and place of Training will be decided in consultation with the Co-ordinator-in-charge of training.

The objective of Training is to expose the students to live planning projects and working environment at planning offices.

The students are required to submit a 'Satisfactory' certificate from the relevant Planning Office after completion of Training. The student will also submit a report, highlighting the Profile of the Planning Office, its organization, key work areas, etc; Introduction to the project(s) worked upon during training; planning brief; methods employed; and planning - design solutions / proposals.

The students will also be required to present their work through drawings / visuals, power point presentations in the form of a Seminar to the faculty and students of the Department over the fifth semester, as per directions of the Co-ordinator-in-charge of training.

THIRD YEAR: SIXTH SEMESTER

6.1 Urban Management – I

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Role of Management in Urban Development

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

Unit 2: Urban Developments in India

Urban development in India: problems and issues, policies, programmes and provisions in the national five year plans; processes of decision making for urban development at national, regional, state, district and local levels.

Unit 3: Organizations for Urban Development

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

Unit 4: Urban Developments and Public/ Private Sector

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

Unit 5: Financing Urban Development

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

6.2 Urban Renewal and Conservation

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction

Overview and introduction of the basic concepts of conservation; values, attitudes and principles for judging the conservation importance of sites, areas and related typology; scope and basic technique of urban conservation; Urban renewal as apart of metropolitan plan; identification of urban renewal areas; conservation, rehabilitation and redevelopment urban renewal policies and strategies

Unit 2: Economic, Financial and Management Aspects

Economic and spatial implications of urban renewal programs, mobilization of resources; incentive zoning - management of urban renewal areas

Unit 3: Conservation and Development

Economic and social aspects of conservation, traffic and management issues; Conservation policies - case studies

Unit 4: Slums

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

Unit 5: Legal and Administrative Aspects

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

6.3 Project Formulation, Appraisal and Management

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction to Project Formulation, Appraisal and Management

The concept of projects, Importance of project formulation, appraisal and management; reasons for shortfall in its performance; scientific management, life cycle of project; detailed project report, and feasibility studies; techniques of financial appraisal, pay back period, IRR, DCF, NPV, CBR.

Unit 2: Project Formulations

Project formulation: definition, objectives; Stages of project formulation and their significance; Methodology for project identification and formulation; Feasibility studies, input analysis, financial cost-benefit analysis, social-cost benefit analysis; Project appraisal and report.

Unit 3: Project Appraisals

Project formulation: definition, objectives; Need for project appraisal; Project formulation: definition, objectives; Stages of project form Network analysis; CPM, PERT, resource levelling and allocation, time-cost trade off aspects; Bar charts, Milestones, Standard oriented cost control techniques; Techno-economic analysis of projects.

Unit 4: Project Implementation and Monitoring

Project implementation, stages of implementation, Teamwork, actors in project implementation; Project monitoring: meaning objectives and significance; Monitoring techniques: integrated reporting, Milestones, time and cost over run and under runs, unit index techniques.

Unit 5: Project Evaluations

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

6.4 Introduction to Urban Design

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit: 1 Introduction to Urban Design Theory

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

Unit: 2 Elements of Urban Design

Urban form as determined by inter - play of masses, voids, building typology; scale, harmony, symmetry, color, texture, light and shade,; dominance, height, urban signage and graphics; organization of spaces and their articulation in the form of squares, streets, vistas and focal points; image of the city and its components such as edges, paths, landmarks, street features, sky - line, etc,; urban transportation.

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 Control of Urban Design

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

Unit: 5 Contemporary Practices

Townscape policies, building byelaws and regulations for existing and emerging areas of development; Special rules for heritage and hill areas

6.5 Planning and Management of Informal Sector

Lecture Hours per Week	1
Practical Hours per Week	2
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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 organizations associated with provision of basic needs.

Unit3: 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; Role of informal sector in housing stock, economy, commercial activities, etc.; Implications in physical planning.

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 organizations; existing management; their organizational set-up and limitations; planning and development of urban settlements in respect of the spontaneous growth; case studies from India and other developing countries.

6.6 Geographic Information Systems for Planning

Lecture Hours per Week	1
Practical Hours per Week	2
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Need for GISs

Maps and Spatial Information, Limitations of Typical DBMS Packages and CAD Packages; Need for GISs.

Unit 2: Introductions to GISs

Geographic Information Systems, Introduction, Components, Benefits; Computerized GISs, Input and Output Devices; Spatial Data Entry into GIS, Spatial Information Security and Sharing; Data Structure for GIS, Vector and Raster Data Structures, Comparative Advantages and Disadvantages; Maps, Base Maps and Thematic Maps, Mapping and Spatial Analysis Software, Linking of Attribute Data, Spatial Data Aggregation; Spatial Data Generalization; Limitations of GISs

Unit 3: GIS Modelling

Overlay functions in GIS; using attribute over spatial data in Modelling; case study based land suitability analysis; Modelling service area for social infrastructures; impact analysis

Unit 4: Specific Packages

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

Unit 5: Advanced Concepts in GISs

Introduction to Dynamic GISs; Integration of GIS and Digital Image Processing; Integration of GIS and GPS

6.7 Planning and Design Lab - VI (Urban Development Plan)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

Unit 1: Studying Development Plans

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

Unit 2: Secondary Source Information for a Selected City or Town

Identification and preparation of secondary source information of the towns or cities selected for the study

Unit 3: Organization of Field Surveys

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

Unit 4: Analysis and Synthesis

Analysis and synthesis of data and information collected on various aspects; projections of population and workforce; trends and issues identification

Unit 5: Plan, Policies and Proposals

Preparation of policies and proposals with different scenarios and identification of priorities and action areas; phasing and monitoring; governance structures for implementation; land use plan and the plan document

Note: Each student shall undertake training and planning (or related) during summer vacation. The exact period and place of training will be decided in consultation with the co-ordinator in charge of training

FOURTH YEAR: SEVENTH SEMESTER

7.1 Introduction to Regional Planning

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction to Region

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

Unit 2: Interactions within a Region

Regional interaction: Rank Size Rule, Settlement patterns, Central place theory; Loschian theory; Regional networks.

Unit 3: Regional Developments

Regional development; Balanced and unbalanced development; Under-development; Regional multiplier, input-output model; Linear programming applications; Cumulative causation theory; Core-periphery model; Growth poles and centers.

Unit 4: Planning Processes

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

Unit 5: Case Studies

Selected case studies in regional development: Rajasthan Canal Area, South-East Resource Region, Western Ghats Region, etc.; District Planning; Metropolitan regions: National Capital Region, Mumbai Metropolitan Region, etc.

7.2 Urban Governance

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction to Urban Governance

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

Unit2: Governance and the Government

Government, governing and governance; Determinants and indicators of good governance; Citizens charter and other instruments; Decision making processes; Need for openness and transparency; People's participation, collaborative management; Local governance.

Unit 3: Governance for Urban Management

Evolution of development and management systems; Scope of development management at the National, state and local levels; Hierarchy of urban settlements; Institutions and organizations; Stakeholders, their perceptions and role in urban management

Unit 4: Governance and Urbanization

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

Unit 5: Governance in Post 74th Amendment Scenario

74th Constitution Amendment Act, including - XII schedule, decentralization of powers and functions; Local and participatory planning, bottom up, decentralized and integrated planning processes; Planning, governance and spatial strategy; Best practices of planning and quality of governance.

7.3 Urban Finance

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Multiple Finance

Nature and composition of income and expenditure, limitations and need for revenue enhancements; Expenditure control methods and mechanisms; Budgetary allocation from Central and State Governments for urban development; Assistance from foreign donors and Multi National agencies; Non-traditional sources of funding; Market access; Pool finance and prerequisite conditions for accessing nontraditional funds.

Unit 2: Additional Funding sources

Types of partnership approaches; Privatization of civic services; public private partnership mechanisms; Types of contracts and ownerships; Emerging cost effective technology interventions; User charged projects; Pricing of services.

Unit 3: Resources Based on Achievement of Urban Reforms

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

Unit 4: Institutional Capacity Enhancement

Better finance management, management process; Accounting and budgeting, asset management, receivables management, cost centre approach; Computerization as tool for resource enhancement; Role of Management Information Systems.

Unit 5: Plan forms and Indices

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

7.4 Disaster Mitigation and Management

Lecture Hours per Week	1
Practical Hours per Week	2
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Basic Concepts of Disaster Management

Disaster - definitions, concept and perceptions; different types of disasters; recent initiatives at national and state level; Kyoto Framework of disaster mitigation and management; Disaster management policy - national and states; Disaster Management Act - national and states

Unit 2: Disaster Management Mechanisms

Disaster management mechanisms - national, state and district levels; select global practices; disaster and development; physical planning and disaster management plans; various role players in disaster management - NGOs / CBOs and Armed Forces; Community Based Disaster Preparedness (CBDP)

Unit 3: Disaster Risk Mitigation

Natural Disasters - physical phenomenon, causes and consequences mitigation and management practices - cyclones, floods, earthquakes, landslides etc.; causes and risk mitigation strategies at the Master Plan for industrial, chemical and biological disasters; land use planning, building bye laws and disaster safe construction practices for different types of disasters

Unit 4: Disaster Preparedness

Forecasting and early warning systems for various types of disasters; communication and information technology in disaster management; disaster education and awareness; documentation and case studies on natural disasters. Urbanization, land requirements, social and affordability issues of land use, Climate change and its implications in disaster mitigation

Unit 5: Post Disaster Management and Cross Cutting Issues

Post disaster management; rehabilitation and reconstruction of disaster affected areas; urban disaster mitigation; natural resource management for disaster safe habitation; relationship between disaster and environment; safe hill area development guidelines and coastal zone regulations for safe habitation; human settlement planning for consequence mitigation of global warming and climate change.

7.5.1 Infrastructure Planning, Development and Management(Elective)

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Urban Infrastructure Unit 1: Water

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

Unit 2: Sewage and Sanitation

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

Unit 3: Fire Protection and Electricity

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

Unit 4: Regional Infrastructure Planning

Regional poverty and basic needs; Basic needs approach to the provision of infrastructure and networks; Regional infrastructure and network systems: Physical (roads, irrigation system, water supply, sanitation, drainage, watershed management, fire services, telecommunication, energy, electricity, solid waste disposal, etc.); Social (health and education) and economics (banking, marketing and public distribution systems); Diagnosis of issues, methodology, role of regional planner.

Unit 5: Issues in Regional Infrastructure Planning

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

7.5.2 Rural Development and Management (Elective)

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Introduction to Rural Development

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

Unit2: Roots of Rural Development in India

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

Unit 3: Post Independence rural Development

Balwant Rai Mehta Committee - three tier system of rural local Government; Need and scope for people's participation and *Panchayati Raj*; Ashok Mehta Committee - linkage between *Panchayati Raj*, participation and rural development.

Unit 4: Rural Development Initiatives in Five Year Plans

Five Year Plans and Rural Development; Planning process at National, State, Regional and District levels; Planning, development, implementing and monitoring organizations and agencies; Urban and rural interface - integrated approach and local plans; Development initiatives and their convergence; Special component plan and sub-plan for the weaker section; Micro-eco zones; Data base for local planning; Need for decentralized planning; Sustainable rural development.

Unit 5: Post 73rd Amendment Scenario

73rd Constitution Amendment Act, including - XI schedule, devolution of powers, functions and finance; *Panchayati Raj* institutions - organizational linkages; Recent changes in rural local planning; *Gram Sabha* - revitalized *Panchayati Raj*; Institutionalization; resource mapping, resource mobilization including social mobilization; Information Technology and rural planning; Need for further amendments.

7.6 Metropolitan Planning, Development and Management

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Metropolis and Metropolitanisation

Introduction to metropolis and related concepts, growth and scale; Complexities: social, economic, physical and administrative; Metropolitanisation in India: general trends and distribution; Issues and problems in metropolitan planning and development

Unit 2: Metropolises and its Region

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

Unit 3: Forms

Metropolitan centralization and decentralization processes; Concepts of ring and satellite towns, counter-magnets; Forms and concepts for metropolitan planning and development: Sheet, Galaxy, Core, Star, Ring and Multi-nucleated; Merits and demerits; Efficient functioning of metropolis

Unit 4: Metropolitan Planning, Development and Management Strategy

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

Unit 5: Case Studies in Metropolitan Planning and Development

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

7.7 Planning and Design Lab - VII (Regional Planning)

Lecture Hours per Week	0
Practical Hours per Week	11
End Semester Examination	00
Internal Assessment	200
External Jury	200
Total Marks	400

Unit 1: Context of Regional Plans

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

Unit 2: Constitutional Provisions

District planning in the context of 73rd and 74th Constitution Amendment Acts; District Planning Committees (DPCs); Metropolitan Planning Committees (MPCs) and Ward Committees

Unit 3: Organization of Field Surveys

Formulation of goals, objectives, methodologies; identification of data and sources of information; Collection of secondary and primary data for sectoral and spatial planning; detailed data analysis,

Unit 4: Analysis and Synthesis

Identification of development issues, potential thrust areas and constraints: sectoral and spatial; designing of alternative planning strategies, settlement patterns and development strategies; Sectoral and spatial prioritization, phasing, financial plans, institutional mechanisms, legislative framework, management plans

Unit 5: Plan, Policies and Proposals

Preparation of Regional Plan Document along with drawings, etc; Preparation of policies and proposals with different scenarios and identification of priority areas; phasing and monitoring; governance structures for implementation; regional land utilization plan and the plan document

7.8 Training-Seminar - II

Lecture Hours per Week	0
Practical Hours per Week	0
End Semester Examination	00
Internal Assessment	50
External Jury	00
Total Marks	50

Each student shall undertake Training in a planning (or related) office during summer vacation between the Sixth and Seventh semester. The period of Training will be six weeks. The exact period and place of training will be decided in consultation with the Co-ordinator-in-charge of training.

The objective of Training is to expose the students to live planning projects and working environment at planning offices.

The students are required to submit a 'Satisfactory' certificate from the relevant Planning Office after completion of training. The student will also submit a Report highlighting the Profile of the Planning Office, its organization, key work areas, etc; Introduction to the project(s) worked upon during training; planning brief; methods employed; and planning - design solutions / proposals.

The students will also be required to present their work through drawings / visuals, power point presentations in the form of a Seminar to the faculty and students of the Department over the seventh semester, as per directions of the Co-ordinator-in-charge of training.

FOURTH YEAR: EIGHTH SEMESTER

8.1 Urban Management – II

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

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, behavioral 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 system; integration versus disintegration; co-ordination and co-operation; centralization and decentralization; single versus plural supervision; elements and types of organization; theories of organization – scientific management theory, bureaucratic theory, classis theory, human relations theory; behavioral approach and systems approach

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 and Resolutions

Nature and mode of resolution of conflicts; public participation in planning as an aid to better understanding planning and implementation; political nature of planning and implementation problems in India; Case studies; examples from the other parts of the world highlighting situations where such problems have been minimized.

8.2 Planning Practice – II

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Role of Planner

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

Unit 2: Organization, 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 / neighborhood; layout, group housing schemes, commercial centers, industrial estates, etc; Consultancy agreements and safeguards; Fees and scales of professional charges, competitions and copyrights.

Unit 3: Valuation

Fundamentals of valuation, ownership of land, compound interest theory, calculating of 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 capitalization methods, land and building method and other methods of valuation; Purpose of valuation; Valuation for wealth tax, income tax, capital gains tax, property tax, gift tax, etc.

Unit 5: Contract Documents and Project Formulation

Tenders, contracts, arbitration, schedule of rates for construction; Materials, labor and equipment for land development, unit and mode of measurements, rate analysis; Formulations of project proposals and outline; Preparation of and response to Notice Inviting Tenders, Expression of Interest, Terms of Reference, Penalty clauses, etc.

Note: This course will be delivered by practitioners having considerable experience in planning practice.

8.3 Human Values in Planning

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

The objective of the course is an exploration of human values, which go into making a 'good' human being, a 'good' professional, a 'good' society and a 'good life'. The context is the work life and the personal life of modern Indian professionals.

Unit 1: Nature of Values

The value-crisis in the contemporary Indian Society; The nature of values: the value spectrum for a good life; The Indian system of values.

Unit 2: Values and Science and Technology

Material development and its values; the challenge of science and technology; Values in planning profession, research and education

Unit 3: Types of Values

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

Unit 4: Ethics

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

Unit 5: Values and Managements

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

8.4.1 Environmental Impact Assessment (Elective)

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	0
Total Marks	100

Unit 1: Introduction

Role of Environmental Impact Assessment in the planning and decision making process; Definition and need, evolution and objectives, tasks and scope.

Unit 2: Methods

Methods of Environmental Impact Assessment; Advantages and limitations; Case studies from India and abroad on projects of various types covering different levels of planning

Unit 3: Impacts on Land Uses and Resources

Assessment of impacts on land use, Urban and regional; Assessment of impacts on resources (including air, water, flora and fauna); Case studies from India and abroad on projects of various types covering different levels of planning

Unit 4: Social and Health Impacts

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

Unit 5: Environmental Impact Assessment

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

8.4.2 Public Private Partnerships in Urban Environmental Services (Elective)

Lecture Hours per Week	3
Practical Hours per Week	0
End Semester Examination	50
Internal Assessment	50
External Jury	00
Total Marks	100

Unit 1: Urban Environment

The urban environment; existing attributes and changing scenario; Problems associated with urban environmental services.

Unit 2: Role and Trends

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

Unit 3: Forms of Partnerships

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

Unit 4: Partnerships, Alliances and Urban Environmental Services

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

Unit 5: Mechanisms of PPPs

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

8.5 Planning Thesis

Lecture Hours per Week	0
Practical Hours per Week	18
End Semester Examination	00
Internal Assessment	400
External Jury	200
Total Marks	600

Each student of Bachelor of Planning is required to prepare a thesis on the subject of his / her choice, concerning urban, regional or rural planning. The topic shall be approved by the concerned department. Thesis will provide an opportunity to the student to conduct independent research by using the skills of analysis and synthesis learnt through various theory and practical courses. Thesis will be completed under the guidance of an approved research supervisor allotted by the Department. Thesis will be prepared by the student as per Thesis Manual prepared by the Department. The students will be required to present thesis orally, graphically and through written report. The student will also be required to present her thesis before the external jury appointed by the concerned University / Insititute / School.

Unit 1: Need for the Study and Formulation of Goals and Objectives

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

Unit 2: Literature Search

Previous published work on the subject area has to be critically examined for finding out existing thought processes of other authors and trends (proper acknowledgements to be given to authors)

Unit 3: Field Surveys

Depending on the research topic, field surveys have to be designed and field work has to done after conducting appropriate sample surveys

Unit 4: Synthesis of Data and Information and Findings

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

Unit 5: Proposals and Recommendations

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