BIRLA INSTITUTE OF TECHNOLOGY
MESRA

RANCHI, INDIA

CHOICE BASED CURRICULUM

FOR

MASTERS

IN

URBAN PLANNING

DEPARTMENT OF ARCHITECTURE

Effective from academic year 2018 – 2019 onwards

Institute Vision

To become a Globally Recognized Academic Institution in consonance with the social, economic and ecological environment, striving continuously for excellence in education, research and technological service to the National needs.

Institute Mission

- To educate students at Undergraduate, Post Graduate Doctoral andPost-Doctorallevels to perform challenging engineering and managerial jobs in industry.
- To provide excellent research and development facilities to take up Ph.D. programmes and research projects.
- To develop effective teaching and learning skills and state of art research potential of the faculty.
- To build national capabilities in technology, education and research in emerging areas.
- To provide excellent technological services to satisfy the requirements of the industry and overall academic needs of society.

Department Vision

The underlying vision for the Department of Architecture is to make the department an academic knowledge hub that will actively contribute in the contemporary domain, by

- Providing innovative professionals who will contribute wholesomely to nation building.
- Providing individuals who can make significant contribution to the advancement of the society.
- Preparing students for leadership roles in the fields of Architecture

Department Mission

The mission of the Department of Architecture is to foster a student-centered educational program in architecture and urban planning. The programmes through its pedagogy which is heuristic and responsive to technological, cultural, and social environments, seeks to offer a diverse, interdisciplinary and rigorous curriculum that will promote personal development and professional excellence. The Department is committed in:

- Imparting strong fundamental concepts to students and motivate them to find innovative solutions to architectural and planning problems independently
- Developing architects and planners with managerial attributes capable of applying latest technology with responsibility
- Creation of congenial atmosphere and excellent research facilities for undertaking quality research by faculty and students

Programme Educational Objective for MUP

1. To provide high quality education that prepares students to assume professional roles in the field of urban planning by imparting sound knowledge in the core, allied and specialised subjects with the help of latest technologies and imparting compulsory training in practical field.

2. To prepare students to work in multi-disciplinary and challenging environment of the building industry in the managerial capacity of handling various urban planning related projects with due respect to professional ethics and social obligation.

3. To orient students towards various research activities related to the field as well as other emerging fields of interest, which may lead them towards further studies and take up PhD program.

4. To engagein lifelong learning, additional and continual formal education, professional development, and self-study in order to provide high quality service to the building industry and overall academic needs of the society.

Program Outcomes (PO) for MUP

A post-graduate shall

a) Be competent in applying advanced knowledge of urban and regional planning issues for the purpose of obtaining solution to a multi-disciplinary problem.

b) Gain skilful knowledge of complex planning problems and its analysis

c) Be proficient in arriving at innovative solution to a problem with due considerations to society, environment, ethics and legislation.

d) Be capable of undertaking appropriate research methods to solve an urban and regional problem to arrive at valid solution based on appropriate interpretations of data.

e) To demonstrate consciousness of societal and environmental issues relevant to professional practice and contribute to sustainable development.

f) Recognize the need for continuous learning and upgrade their planning knowledge for growth in their professional career.

STRUCTURE OF MASTERS OF URBAN PLANNING PROGRAMME

Code	Name of the subject	L	T	P	Credit
SEMESTER I					
	Programme Core (PC)				
AR 601	Introduction to Town and Regional Planning	3	0	0	3
AR 602	Transportation Planning	3	0	0	3
AR 603	Urban Design	3	0	0	3
	Programme Elective (PE)	3	0	0	3
AR 604	Disaster Management and Planning				
AR 605	Urban Ecology and Environmental Planning				
	Open Elective (OE)	3	0	0	3
	LABS				
AR 611	Planning Studio / Workshop(With Field study)	0	0	8	4
AR 612	Urban Design	0	0	4	2
	Semester total credit	**15**	**0**	**12**	**21**
SEMESTER II					
	Programme Core (PC)				
AR 651	Planning Legislation and Professional Practice	3	0	0	3
AR 652	Housing and Community Planning	3	0	0	3
AR 653	Urban Infrastructure Planning	3	0	0	3
	Programme Elective (PE)	3	0	0	3
AR 654	New Town Planning				
AR 655	Regional and Rural Planning				
	Open Elective (OE)	3	0	0	3
	LABS				
AR 661	Planning Studio / Workshop(With Field study)	0	0	12	6
	Semester total credit	**15**	**0**	**12**	**21**
SEMESTER III					
	Programme Core (PC)				
MT 601	Research Methodology	3	0	0	3
	Programme Elective (PE)	3	0	0	3
AR 701	Urban regeneration and Conservation techniques				
AR 703	Sustainable city planning				
	LABS				
AR 711	Dissertation & Planning Seminar	0	0	16	8
AR 712	Training viva ***	0	0	4	2
	Semester total credit	**6**	**0**	**20**	**16**
SEMESTER IV					
	Research Project				
AR 751	Thesis / dissertation	0	0	32	16
	Semester total credit	**0**	**0**	**32**	**16**
	Total of 4 semester				**74**

FRAME WORK / CHOICE BASED CURRICULUM SYSTEM (CBCS)

S. No	Category	Credits	Broad Category
1	Programme Core (PC)	21	Department Courses
1.1	LABS	14	
2	Programme Electives (PE)	09	
3	Research project (RP)	24	
4	Open Electives (OE)	06	Other Department Courses - Interdisciplinary
	TOTAL	**74**	

MUP PROGRAMME SCHEME - SEMESTER WISE DISTRIBUTION

Recommended scheme of study				
S. No	**Semester**	**Course Category**	**Credits**	**Total**
1	FIRST	3 Programme Core (PC)	9	21
		1 Progamme Elective (PE)	3	
		1 Open Elective (OE)	3	
		2 LABS	6	
2	SECOND	3 Programme Core (PC)	9	21
		1 Progamme Elective (PE)	3	
		1 Open Elective (OE)	3	
		1 LABS	6	
3	THIRD	Research Project	8	16
		PC	3	
		PE	3	
		1 LAB	2	
4	FOURTH	Research Project	16	16
TOTAL				**74**

MASTERS IN URBAN PLANNING

PROGRAMME CORE (PC) (*offered in MO session only)*

S. No	Course Code	Course Title	Pre requisites / Co requisites	Credits
1	AR 601	Introduction to Town and Regional Planning	Nil	3
2	AR 602	Transportation Planning	Nil	3
3	AR 603	Urban Design	Co- requisite - Should have registered for MUP 112	3
4	AR 611	Planning Studio / Workshop(With Field study)	Nil	4
5	AR 612	Urban Design	Co- requisite - Should have registered for MUP 103	2
6	MT 601	Research Methodology	Nil	3
7	AR 711	Dissertation & Planning Seminar	Pre- requisite-Should have cleared all Planning Sessionals in Semester 1	8
8	AR 712	Training viva	Nil	2

PROGRAMME CORE (PC) (*offered in SP session only)*

S. No	Course Code	Course Title	Pre requisites / Co requisites	Credits
1	AR 651	Planning Legislation and Professional Practice	Nil	3
2	AR 652	Housing and Community Planning	Nil	3
3	AR 653	Urban Infrastructure Planning	Nil	3
4	AR 661	Planning Studio / Workshop (With Field study)	Pre – requisite – should have registered for MUP 111	6
5	AR 751	Thesis / dissertation	Pre – requisite – should have cleared all sessionals upto 2nd semester	16

ELECTIVES

Students pursuing Masters in Urban Planning should complete at least three (*09 credits*) courses each from the Programme Electives and atleast 2 Open electives (*06 credits*) listed below.

PROGRAMME ELECTIVE (PE)

S. No	Course Code	Course Title	Pre requisites / Co requisites	Credits
1	AR 604	Disaster Management and Planning	Nil	3
2	AR 605	Urban Ecology and Environmental Planning	Nil	3
3	AR 654	New town Planning	Nil	3
4	AR 655	Regional and rural planning	Nil	3
5	AR 701	Urban regeneration and Conservation techniques	Nil	3
6	AR 703	Sustainable city planning	Nil	3

OPEN ELECTIVE (OE) for other departments

S. No	Course Code	Course Title	Pre requisites / Co requisites	Credits
1	AR 604	Disaster Management and Planning	Nil	3
2	AR 605	Urban Ecology and Environmental Planning	Nil	3
3	AR 654	New town Planning	Nil	3
4	AR 655	Regional and rural planning	Nil	3

*** 6 weeks practical training in planning office at the end of 2nd semester corresponding to the summer break

SEMESTER I

COURSE INFORMATION SHEET

Course code **:** AR 601
Course title : Introduction to Town and Regional Planning
Pre-requisite(s) **:** None
Co- requisite(s) **:** None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class **:** MUP
Semester / Level **:** I
Branch **:** Architecture
Name of Teacher : Ritu Agrawal

Course Objectives
This course enables the students:

A	To initiate the student to the theoretical basis for various concepts and evolution of civic planning as a discipline through theories and fundamentals of modern planning thought.
B.	To develop and understand the basic theories of urban and regional planning.
C.	To gain knowledge about settlement evolution, planning and its theories.
D.	To be sensitive to the notion of planning around the world.
E.	To enhance the understanding of principles of planning, regional planning

Course Outcomes
After the completion of this course, students will be able:

1.	To explain the principles and strategies for town planning.
2.	To identify appropriate planning and management strategies in the urban and regional planning context.
3	To recognize and make scientifically informed decisions about planning issues in urban areas.

Syllabus

Module 1: Introduction to Planning, Definitions and Bases of Planning
Defining planning as a discipline, multidisciplinary nature, role of a planner, fields of planning - Urban, regional, environmental, transport and infrastructure. Various definitions of town and country planning; Goals and objectives of planning; Components of planning; Benefits of planning; Argum ents for and against planning. Economics and social planning as bases of physical planning.
Types of plans: Definition of development plan; Types of development plans: master plan, city development plan, structure plan, district plan, action area plan, subject plan. Hierarchy of plans**:** regional plan, sub-regional plan; Sector plans and spatial plans; Town planning schemes.

Module 2: Evolution of Settlements
The City in History. Settlement size, pattern and structure as a function of sociocultural, economic, military and religious factors. Variations in civilizations- Egyptian, Mesopotamian, Greek, Roman.
Town planning in Medieval times and in Renaissance Europe. Planning in Post Industrial Revolution Era - Concepts of garden City, City beautiful, Linear city etc.,Contributions of leading masters in planning.
Socioeconomic impacts of growth of urban areas;Impact of technology on urban forms. Urban structure a nd form- land use distribution.
Types of City Plans: Comprehensive Planning, Master plans, Structure Plans, Zonal Plans

Module 3: Theories of Urbanization

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

Module 4: Concepts and Typology of Regions and Regional Dynamics

Basic Concepts of Regions, Defining a region: fluidity and purposiveness, Typology of Regions: Resource Regions, Mega, Macro, Meso, and Micro Regions; Concept of Regional Planning: Nature, Objectives, Levels and Aims; Regional Dynamics: Growth of Mega and Metro Regions: Scale, Complexity and its impact on national and international scenario, convergence and divergence. Regional Economy, competitiveness among regions, backward and leading regions in development; Special Regions: SEZ, Agro Regions, Ecological regions, etc. Regional Development Strategies: Centralized and Decentralized; Regional Planning

Module 5: Regions in India and its Planning

Regions in Indian Context: Resource Regions, Corridors as regions, National, sub-national and State as a region, macro, meso and micro regions in India. Case Studies from India: NCR and Delhi Mega Region, Mumbai Mega Region, Kolkata Metro Region, Chennai Metro Region, and other Metro Regions in India.

Text Books:

T1 - Margaret, Robert., An Introduction to Town Planning Technique,
T2 - Catanese and Snyder, Introduction to Urban Planning,.
T3 - Rabinson, J N,Planning and forecasting technique: an introduction to macroeconomics applications,
T4 - Faludi, Andreas,Planning Theory,
T5 - Misra, R.P, Regional Planning – Concepts, Techniques, Policies and Case Studies,., New Delhi.
T6 - R.P Mishra, Regional Development Planning in India, Vikas, Delhi.
T7 - Qaiyum, A., Regional Planning and Development, ITPI, New Delhi.
T8 - Rangasamy, S., Regional Planning and Development, Madurai.
T9 - Glasson, John,An Introduction to Regional Planning – Concept, Theory and Practice, Susesex.

References:

R1 - GoI: Ministry of Rural Development, Department of Land Resource, Desert Development Programme, New Delhi
R2 - GoI: Planning Commission, Report on Development of Drought Prone Areas by NationalCommittee on the Development of Backward Areas, New Delhi
R3 - GoI: IWMP, Ministry of Rural Development, New Delhi
R4 - GoI: Ministry of Development of North Eastern Region, New Delhi
R5 - H.S. Yadav et al, Small and Medium Towns and Their Role in Regional Development, Gyan Publishing House
R6 - National Institute of Urban Affairs (NIUA),The Role of Intermediate Towns in Regional Development : A Case Study NIUA, New Delhi
R7 - T Willium, .Landuse Planning: Techniques of Implementation, Patterson,
R8 - Planning Theory and Techniques ITPI Reader volume

Gaps in the syllabus (to meet Industry/Profession requirements) : nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H	M	M	H	M	-
2	H	H	H	M	L	L
3	L	H	H	H	M	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO2, CO3
CD3	Seminars	CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1.	L1, L2, L3			Introduction to Planning, Definitions and Bases of Planning Defining planning as a discipline, multidisciplinary nature, role of a planner, fields of planning - Urban, regional, environmental, transport and infrastructure. Various definitions of town and country planning; Goals and objectives of planning.	T1, T2, T3, T4, R8.	CO1, CO2		PPT Digi Class/ Chalk -Board	
2.	L4, L5, L6			Types of plans: Definition of development plan; Types of development plans: master plan, city development plan, structure plan, district plan, action area plan, subject plan. Hierarchy of plans: regional plan, sub-regional plan; Sector plans and spatial plans; Town Planning schemes.	T1, T2, T3, T4, R8.	CO1, CO2		PPT Digi Class/ Chalk -Board	
3.	L7, L8, L9			Evolution of Settlements The City in History. Settlement size, pattern and structure as a function of socio cultural, economic, military and religious factors. Variations in civilizations.	T2, T4.	CO2, CO3		PPT Digi Class/ Chalk -Board	
4.	L10, L11, L12			Concepts of garden City, City beautiful, Linear city etc; Contributions of leading masters in planning.	T1, T2, T4	CO1, CO3		PPT Digi Class/ Chalk -Board	

				Socioeconomic impacts of growth of urban areas; Impact of technology on u rban forms. Urban structur e and form- land use distribution.					
5.	L13, L14,			Ist Quiz covering Module 1 and part of Module 2					
6.	L15			Theories of urbanization including Concentric Zone Theory;	T1, T2, T3, T4, R7, R8.	CO2, CO3		PPT Digi Class/ Chalk -Board	
7.	L16, L17, L18			Sector Theory; Multiple Nuclei Theory and other latest theories; Land Use and Land Value. Theory of William Alonso on location and Land use;	T1, T2, T3, T4, R7, R8.	CO3, CO4		PPT Digi Class/ Chalk -Board	
8.	L19, L20, L21			Basic Concepts of Regions, Defining a region: fluidity and purposiveness, Typology of Regions: Resource Regions, Mega, Macro, Meso, and Micro Regions; Concept of Regional Planning: Nature, Objectives, Levels and Aims..	T5, T6, T7, T8.	CO2, CO3		PPT Digi Class/Ch alk -Board	
9.	L22, L23, L24			Regional Dynamics: Growth of Mega and Metro Regions: Scale, Complexity and its impact on national and international scenario, convergence and divergence.	T5, T6, T7, T8.	CO2, CO3		PPT Digi Class/ Chalk -Board	
10.	L25, L26,			Regional Economy, competitiveness among regions, backward and leading regions in development; Special Regions: SEZ, Agro Regions, Ecological regions, etc	T5, T6, T7, R8	CO1, CO2		PPT Digi Class/Ch alk -Board	
11.	L27			IInd Quiz covering part of					

				Module 2 and Module 3					
12.	L28, L29, L30			Regional Development Strategies: Centralized and Decentralized Regional Planning.	T5, T6, T7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
13.	L31, L32, L33			Regions in Indian Context: Resource Regions, Corridors as regions,	T5, T6, T7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
14.	L34, L35, L36			National, sub-national and State as a region, macro, meso and micro regions in India. Kolkata Metro Region, Chennai Metro Region, and other Metro Regions in India.	T5, T6, T7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
15.	L37, L20, L21			Case Studies from India: NCR and Delhi Mega Region, Mumbai Mega Region,	T5, T6, T7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
16.	L38			Revisions and discussion on the assignments					
17.	L39, L40			IIIrd Quiz covering Module 4					

COURSE INFORMATION SHEET

Course code : AR 602
Course title : Transportation Planning
Pre-requisite(s) : Nil
Co- requisite(s) : Nil
Credits : 03 L:3 T:0 P:0
Class schedule per week : 03
Class : MUP
Semester / Level : I
Branch : Architecture
Name of Teacher : Anila Smriti Surin

Course Objectives

This course enables the students:

A.	To provide a broad overview of urban transportation planning, including historic and emerging issues faced in the field and the tools that are available to address these challenges.
B.	To introduce travel survey method for understanding travel behaviour.
C.	To introduce the key concepts of the urban transportation planning system
D.	To introduce the fundamental concepts of public transport system such as system, technology and quality of service.

Course Outcomes

After the completion of this course, students will have:

1.	Basic understanding of transportation planning, its theoretical backgrounds and issues occurring in this field and applications.
2.	Skill for collecting data about travel behaviour and analyzing the data for use in transport planning.
3.	Ability to understand the important concepts about public transport system
4.	Ability to describe foundational concepts such as the transportation- land use connection and congestion, and understand the implications of these concepts for policy and practice.

Syllabus
Module 1:
Introduction to transportation planning; The planning concept ; Importance of transportation planning; Classification of roads, road geometries and road components, traffic volume, origin destination, spot speed, speed and delay, parking and pedestrian issues; road networks and hierarchy.
Development of Land - Use models, The Lowry Model, Application of Lowry Model. Smart Growth and Comprehensive Planning Initiatives. Importance of Land use-Transport Integration Land use and mobility patterns in cities, implications of land use patterns on transport and mobility, land use and transport decisions need and benefits of land use transport integration , case cities of land use –transport integration , Best practices of Land use transport integration in India and abroad,

Module 2:
Traffic and transportation surveys- Study area definitions, surveys and their types(Home Interview Survey, Commercial Vehicle Survey, Intermediate Survey Public Transport, Public Transport Survey, Roadside-Interview Survey, Cordon-Line Survey, Post-Card Questionnaire Survey, Registration-Number

Survey etc.) Volume Count, Origin and Destination, Parking and Public Transport Surveys, Inventory of Transport facilities, sampling of travel methods, survey techniques; Travel survey process; data processing and interpretation. Travel demand modelling,

Module 3:

Use of analytical models for transportation planning- programming and scheduling, processing of travel data, analysis and interpretation of traffic studies; introduction transport planning process;
Trip generation - Multiple linear regression model, Trip Attraction Modelling ,
Trip distribution- trip distribution data, Growth factor methods, Average factor method, Gravity model method,
Trip assignment- Route assignment – Minimum path, all or nothing method, Capacity restraint method,
Model split- Influencing Factors, trip end and trip interchange model, Mode Choice Modeling, Logit model of mode choice, binary and multinomial Logit model.

Module 4:

Traffic control systems: Signalling, Webster's method, Shockwaves; Traffic management ,Design of rotary, Solving transportation problems by Vogel's method,
Introduction of public transport systems , introduction to mass transit systems, Transit classification ,Transit system performance, Transit capacity, technology and operations. Review of existing traffic management schemes in Indian cities.

Module 5:

Transport and environment: Traffic noise, factor affecting noise statement measures, standards, air pollution standards, traffic safety, accident reporting and recording systems, factors affecting road safety, transport planning for different target groups. Norms and guidelines for highway landscape, street lighting types, standards and design considerations. Economic evaluation: pricing and funding of transport services and systems, economic appraisal of highway and transport projects. Techniques for estimating direct and indirect road user costs and benefit value of time. Intelligent transport system (ITS) its types and applications, need for sustainable development and sustainable transport; Transit Oriented Development (TOD) Transit Oriented Development- Definition, concepts and key components ; principles of TOD, planning norms and standards of TOD , pre-requisites of TOD , financing TOD , role of stakeholders, case studies of TOD Module.

Text books:

T1 - Bruton, M.J., "Introduction to Transportation Planning", Amazon
T2 - Burton E. and Mitchell, L., "Inclusive urban design: streets for life",Elsevier.
T3 - Kadiyali, L.R "Traffic Engineering and Transport Planning", Khanna Publisher
T4 - Ortuzerv and Williumson, "Transport modelling"
T5 - Principles of Urban Transport Systems Planning, B.G. Hutchinson, McGraw Hill
T6 - Urban Transport: Planning and Management, A K Jain, APH Publishing

Reference books:

Gaps in the syllabus (to meet Industry/Profession requirements) : nil

POs met through Gaps in the Syllabus: nil

Topics beyond syllabus/Advanced topics/Design: nil

POs met through Topics beyond syllabus/Advanced topics/Design: nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H	M	M	M	M	
2	H	H	M	H	H	H
3	M	H	H		M	M
4	H	M	M	H	H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO4
CD3	Seminars	CO3, CO4
CD4	Industrial/guest lectures	CO3, CO4

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / Refere nces	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	L1, L2			Introduction to transportation planning; The planning concept ; Importance of transportation planning	T1	CO1		PPT Digi Class	
1	L3, L4			Classification of roads, road geometries and road components, traffic volume, origin destination, spot speed, speed and delay, parking and pedestrian issues; road networks and hierarchy.	T1, T3	CO1		PPT Digi Class	
2	L5, L6			Development of Land - Use models, The Lowry Model, Application of Lowry Model. Smart Growth and Comprehensive Planning Initiatives.	T5, T6	CO4		PPT Digi Class/Chalk -Board	
3	L7, L8, L9			Importance of Land use-Transport Integration Land use and mobility patterns in cities, implications of land use patterns on transport and mobility, land use and transport decisions need and benefits of land use transport integration , case cities of land use –transport integration , Best practices of Land use transport integration	T5, T6	CO4		PPT Digi Class/Chalk -Board	

				in India and abroad,					
4	L10, L11			Traffic and transportation surveys- Study area definitions, surveys and their types(Home Interview Survey, Commercial Vehicle Survey, Intermediate Survey Public Transport, Public Transport Survey, Roadside-Interview Survey, Cordon-Line Survey, Post-Card Questionnaire Survey, Registration-Number Survey etc.)	T1, T3, T4	CO1, CO2		PPT Digi Class	
4	L12, L13			Volume Count, Origin and Destination, Parking and Public Transport Surveys, Inventory of Transport facilities, sampling of travel methods, survey techniques; Travel survey process; data processing and interpretation. Travel demand modelling,	T1, T3, T4	CO2		PPT Digi Class	
5	L14, L15			Use of analytical models for transportation planning-programming and scheduling, processing of travel data, analysis and interpretation of traffic studies; introduction transport planning process;	T3	CO2		PPT Digi Class/Chalk -Board	
6	L16, L17, L18			Trip generation - Multiple linear regression model, Trip Attraction Modelling ,	T3, T4	CO2		Chalk -Board	
7	L19,			Trip distribution- trip	T3,	CO2		Chalk	

	L20, L21			distribution data, Growth factor methods, Average factor method, Gravity model method	T4			-Board	
8	L22, L23			Trip assignment- Route assignment – Minimum path, all or nothing method, Capacity restraint method	T3, T4	CO2, CO3		Chalk -Board	
9	L24, L25,			Model split- Influencing Factors, trip end and trip interchange model, Mode Choice Modeling, Logit model of mode choice, binary and multinomial Logit model.	T3, T4	CO2, CO3		PPT Digi Class/Chalk -Board	
9	L26, L27			Traffic control systems: Signalling, Webster's method , Shockwaves	T3, T6	CO2, CO3, CO4		PPT Digi Class/Chalk -Board	
10	L28, L29			Traffic management ,Design of rotary	T3, T4, T6	CO4		PPT Digi Class/Chalk -Board	
10	L30, L31			Solving transportation problems by Vogel's method	T3	CO2, CO3, CO4		Chalk -Board	
11	L32, L33			Introduction of public transport systems , introduction to mass transit systems, Transit classification ,Transit system performance, Transit capacity, technology and operations. Review of existing traffic management schemes in Indian cities.	T2, T5, T6	CO3, CO4		PPT Digi Class	
12	L34, L35			Transport and environment: Traffic	T2, T5,	CO1, CO4		PPT Digi Class	

				noise, factor affecting noise statement measures, standards, air pollution standards, traffic safety, accident reporting and recording systems, factors affecting road safety, transport planning for different target groups. . Norms and guidelines for highway landscape, street lighting types, standards and design considerations.	T6				
12	L36			Economic evaluation: pricing and funding of transport services and systems, economic appraisal of highway and transport projects. Techniques for estimating direct and indirect road user costs and benefit value of time.	T5, T6	CO3, CO4		PPT Digi Class	
13	L37, L38			Intelligent transport system (ITS) its types and applications, need for sustainable development and sustainable transport;	T2, T4, T6	CO4		PPT Digi Class	
14	L39, L40			Transit Oriented Development (TOD) Transit Oriented Development- Definition, concepts and key components ; principles of TOD, planning norms and standards of TOD , pre-requisites of TOD , financing TOD , role of stakeholders,	T5, T6	CO4		PPT Digi Class	

COURSE INFORMATION SHEET

Course code **:** AR 603
Course title **:** Urban design
Pre-requisite(s) **:** None
Co- requisite(s) **:** None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class **:** M.U.P.
Semester / Level **:** I
Branch **:** Architecture
Name of Teacher **:** Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A	To develop concepts of urban design at various urban scales
B.	To engage in an effective design process; that entails holistic approach
C.	To apply and use of relevant urban design techniques considering legal tools;

Course Outcomes
After the completion of this course, students will be able to:

1.	To demonstrate design capabilities in approaching urban design at various scales;
2.	To apply and use urban design knowledge contextually
3	To design live urban pockets / squares / blights taking local parameters and issues into consideration, adding contemporary layer to urban aesthetics

Syllabus
Module 1
Introduction of Urban Design & Cities, Early examples of Urban Design in classical and pre-industrial cities – Heritage and the roots of our modern concepts in urban design (a comparative study of Western and Indian Urbanism through different case studies).

Module 2
Objectives and scope of urban design, Basic functions, principles and techniques.Value enhancement, aesthetics and conservation aspects.

Module 3
Urban Design and Urban Analysis through Surveys in Urban Areas, Scale in Urban design, urban mass, perceiving & mapping a city, Urban Space. Urban activity & circulation. Examples at regional, metropolitan, Urban and project level.

Module 4
Techniques of Urban Design with emphasis on public policies, conservation and economic considerations, Road forms, serial, grid-iron, Hierarchy of access routes - Pedestrian areas and malls &Urban elements.

Module 5
Legal aspects with respect to Land Acquisition Act and Town Planning acts - financing for Project realization – Agencies involved in the execution – coordinating role of planning authorities. Urban Arts Commission. Planning and Design parameters for New sustainable Urban spaces.

Text books:

T1 - Bacon, E. N., Design of Cities, Penguin Publishers
T2. Cullen, G., Townscape, London Architectural Press
T3. Gallion A.B. & Simon Eisner, Urban Pattern City Planning and Design, CBS Publishers
T4. Fransesc Zamora; Source of Contemporary Urban Design, Harper Collins Publisher
T5. Kevin Lynch, Image of a city, MIT Press
T6. Spreiregen, Paul. D., Urban Design: The architecture of towns & cities

Reference books:

R1 -Donald Watson, Alan J. Plattus, Robert G. Shibley; Time-saver standards for urban design, McGraw-Hill
R2 - Stephen Marshall, Streets and Patterns, Routledge.

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus: Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Mini projects/Projects
CD5	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H	M	M	H	M	L
2	H	H	M	H	M	
3		H	H	H	M	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO2, CO3
CD3	Seminars	CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	1-3			Introduction to urban design	T1,6, R-1	CO1	Ideology, role, scope, Principles	Chalk-board, PPT	
2	4-6			Introduction to urban design	T1,6, R-1	CO1	History and techniques	Chalk-board, PPT	
3	7-9			Theories, concepts and elements	T2,5, R-2	CO1	Urban Space – theories of legends	Chalk-board, PPT	
4	10-12			Theories, concepts and elements	T2,5, R-2	CO1	Character of an urban area, urban pattern, morphology,	Chalk-board, PPT	
5	13-15			Theories, concepts and elements	T2,5, R-2	CO1	Scale, mass, landuse, zoning regulations	Chalk-board, PPT	
6	16-18			Planning processes	T-4, R-1	CO1, CO2	Survey, byelaws,	Chalk-board, PPT	

				and design			design at city scale		
7	19-21			Planning processes and design	T-4, R-1	CO1, CO2	Emerging concepts, lighting, landscape		
8	22-24			Planning processes and design	T-4, R-1	CO1, CO2	Townscape elements, waterfront and streetscape design	Chalk-board, PPT	
9	25-27			Designing parts of the city	T2,5, R-1	CO3	Designing parts of the city, urban renewal/ rejuvenation of urban form	Chalk-board, PPT	
10	28-30			Designing parts of the city	T2,5, R-1	CO3	Case study / appraisal of an Urban center / central business district /Town center	Chalk-board, PPT	
11	31-33			Legal tools	T-2,3,6	CO3	Principles of Urban Conservation, laws and acts	Chalk-board, PPT	
12	34-36			Legal tools	T-2,3,6	CO3	Urban Arts Commission	Chalk-board, PPT	
13	37-39			Assignments & Guest lecture		CO1			

COURSE INFORMATION SHEET

Course code : AR 604
Course title : Disaster Management and Planning
Pre-requisite(s) : None
Co- requisite(s) : None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class : MUP
Semester / Level : I
Branch : Architecture
Name of Teacher : Dr. Smriti Mishra

Course Objectives

This course enables the students:

A.	To be familiar with the meaning, factors, significance, causes and effects of disasters
B.	To be familiar with the characteristics and typologies of hazards and disasters
C.	To understand the nature, significance, concept, components, and phases of disaster management
D.	To gain an understanding of the tools for hazard and vulnerability assessment at various levels, preparedness
E.	To develop an understanding about earthquake, cyclone and flood resilient building design aspects and features; and identify their role in design & planning solutions for reducing risk.
F.	To learn about disaster risk reduction and prepare an effective disaster management plan through land use and zoning control, site planning and land management measures for natural hazards like earthquake, cyclones and floods.
G.	To provide enhanced understanding of community based approaches to disaster management covering mitigation, preparedness, response, rehabilitation and reconstruction

Course Outcomes

After the completion of this course, students will be able:

1.	To explain about the significance, concept, components, and phases of disaster management cycle
2.	To identify appropriate planning, design and management strategies and regulations and incorporate the same in preparing an effective disaster management plan
3.	To synthesize the knowledge and skills, acquired through the learning of various theories and practices to plan a disaster resilient urban area

Syllabus

Module 1: Fundamentals of Disaster and Disaster Management

Definitions and concepts related to disaster and the related terms– Hazards, Vulnerability, Capacity, Risk. Hazards: classification and types. Causal factors of disaster. Phases of Disaster. Social & Political Imperatives of Disaster: complex and compound disasters. Link between disaster and development. Introduction to disaster management. Characteristics of some common hazards and disasters like Predictability, Factor contributing to vulnerability, Risk reduction measures, Management measures, Specific preparedness Plan. Nature of disaster in India: Major disasters in the Indian context; Disaster profile of the country; Regional understanding of the Hazards to Which our Region May be Vulnerable and its Implication Factors contributing to vulnerability of the Indian population.

Module 2: Aspects of Disaster Preparedness and Risk Assessment
Estimation of Risk; Objectives of assessment; Type of risk and risk assessment; Steps of risk assessment; Problems with risk assessment; Acceptable levels of risk; Assessing risk and vulnerability; Risk perception; Methods of Risk Assessment; Steps in Risk Assessment; Trend in Urban Development and Challenges before Urban Administrators in Risk Reduction; Concepts and overview of technological hazards at the city level; Hazard and vulnerability assessment: concepts, tools and techniques; Pre-disaster mitigation and protection of lifelines and critical facilities against natural hazards; Disaster mitigation measures at individual, group and community level; Human response to disaster – short term and long term effects

Module 3: Resilient cities: Integrating disaster mitigation in spatial planning process
Study of disaster and effects on settlements, disaster atlas, Post disaster action, Concept of Resilient Cities; Micro zoning concept, Intervention into land use plan; planning regulations and building bye-laws, norms and standards, density variations, provisions of infrastructure for disaster mitigation; vulnerability index and mapping; Some traditional local/ regional responses.Risk reduction measures through land use control, site planning and land management. Zoning regulation for construction & reconstruction phase in the seismic, cyclone and flood prone areas and some case studies. Remote-sensing and GIS applications in real time disaster monitoring, prevention, and rehabilitation; Safety Management System: Strategies for Implementation, Emergency Planning, Preparedness And Response At The City Level

Module 4: Disaster Education, Capacity Building and Community Awareness
Capacity building of disaster management teams, Role of Financial Institutions in Mitigation Effort, Group Dynamics, Concept of Team Building, Motivation Theories and Applications, Community awareness and participation at various levels; Role of NGOs/CBOs and communities in disaster education; Relevance of disaster management with relevant to development and environment; School Awareness and Safety Programmes; Use of technology and media for spreading disaster awareness. Role of Media in Disasters; Principles and Methods of Community Based Approaches for Urban Disaster Management; Community Based Disaster Management Practice; Building Community Capability; Education and Training on Mitigation and Emergency Planning

Module 5: International and National Agencies and Institutional Set-up:
UNs mandate for disaster management; UN-Disaster Management Team and their role in disaster management. International Landmarks in Disaster Management: International decade for Disaster Risk Reduction; Hyogo Framework; Sendai Framework. Overview and mandate of India's Disaster Management Act, 2005; Legal and Institutional Framework for Disaster Management in India; Mandate of National Disaster Management Authority (NDMA) of India; India's National Disaster Management Plan (2016)**,** Institutional involvement and policy institutes.

Text books:
T1 - Robest McNamara; Blundering into Disaster, 1987, Bloomsbusy, London.
T2 - Disaster Mitigation: Experiences and Reflections by PradeepSahni
T3 - Talwar, A. K. and Juneja, S. (2009). Cyclone Disaster Management.Commonwealth Publishers.
T4 - Vinod Kr. Sharma; Disaster Management, IIPA, New Delhi.

Reference books:
R1 - Disaster Prevention and Mitigation, 1984, UNDRO Publication, Geneva.
R2 - Babu Thomas,, Disaster Response- A Handbook for Emergencies,
R3 - Office of the UN Disaster Relief Co-ordinator – Disaster prevention and mitigation, Vol 12, Social and Sociological aspects – UNO, NY, 1986.
R4 - Todd W. Miner, Zuzana Stanton-Geddes, Building Urban Resilience: Principles, Tools, and Practice edited by Abhas K. Jha,

R5 - Burby, R. J. Cooperating with Nature.Confronting Natural Hazards with Land-Use Planning for Sustainable Communities. Washington: Joseph Henry Press.
R6 - Disaster Prevention and Mitigation, 1984, UNDRO Publication, Geneva.
R7 - Babu Thomas, Disaster Response,- A Handbook for Emergencies,
R8 - Jagbir Singh,, Disaster Management: Future Challenges and Opportunities, I. K. International
R9 - Town Planning Guidelines for Disaster Management Vol-I &Vol-II, TCPO, India

Gaps in the syllabus (to meet Industry/Profession requirements): Nil

POs met through Gaps in the Syllabus: NA

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3x10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1		L		L	M	H
2	H	H	H	H	H	H
3	H	H	H	H	H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO2
CD3	Seminars	CO2, CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tenta -tive Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Method-ology used	Remarks by faculty if any
1	L1			Definitions and concepts related to disaster and the related terms– Hazards, Vulnerability, Capacity, Risk. Hazards: classification and types. Causal factors of disaster.	R1, R2, R3	CO1,		PPT Digi Class	
1	L2			Phases of Disaster. Social & Political Imperatives of Disaster: complex and compound disasters. Link between disaster and development. Introduction to disaster management.	R2, R3, R4	CO1		PPT Digi Class	
1	L3			Link between disaster and development. Introduction to disaster management.	R2, R3, R4	CO1,		PPT Digi Class	
2	L4, L5			Characteristics of some common hazards and disasters like Predictability, Factor contributing to vulnerability, Risk reduction measures, Management measures, Specific preparedness Plan.	R1 R2, R3, R4	CO1		PPT Digi Class	
2, 3	L6, L7			Nature of disaster in India: Major disasters in the Indian context; Disaster profile of the country; Regional	R9, R12	CO1, CO2		PPT Digi Class	

				Understanding of the Hazards to Which our Region May be Vulnerable and its Implication Factors contributing to vulnerability of the Indian population.					
3	L8,L9,	2		Estimation of Risk; Objectives of assessment; Type of risk and risk assessment; Steps of risk assessment; Problems with risk assessment; Acceptable levels of risk; Assessing risk and vulnerability; Risk perception;	R2, R3, R5, R10	CO1,		PPT Digi Class	
3,4	L9,L10			Methods of Risk Assessment; Steps in Risk Assessment;	R2, R3, R10	CO1, CO2		PPT Digi Class	
4	L11,			Trend in Urban Development and Challenges before Urban Administrators in Risk Reduction; Concepts and overview of technological hazards at the city level; Hazard and vulnerability assessment: concepts, tools and techniques;	R3, R10, R11	CO1, CO2		PPT Digi Class	
4	L 12			Pre-disaster mitigation and protection of lifelines and critical facilities against natural hazards; Disaster mitigation measures at individual, group and community level; Human response to disaster – short term and long-term effects	R11	CO1, CO2		PPT Digi Class	
5	L13,L14,	3		Study of disaster and effects on settlements, disaster atlas, Post disaster action, Concept of Resilient Cities; Micro zoning concept, Intervention into land use plan;	R6, R13	CO1, CO2, CO3		PPT Digi Class	
5,	L15,			Planning regulations and building bye-laws, norms	R13	CO1, CO2,		PPT Digi	

				and standards, density variations, provisions of infrastructure for disaster mitigation;		CO3		Class	
6	L 16			Vulnerability index and mapping;	R2, R3, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
6	L17 L18			Some traditional local/ regional responses. Risk reduction measures through land use control, site planning and land management.	R6, R7, R8,	CO2, CO3		PPT Digi Class/ Chalk -Board	
7	L19, L20			Zoning regulation for construction & reconstruction phase in the seismic, cyclone and flood prone areas and some case studies.	R7, R8, R13	CO2, CO3		PPT Digi Class	
7, 8	L21, L22			Remote-sensing and GIS applications in real time disaster monitoring, prevention, and rehabilitation;	R6	CO1		PPT Digi Class/ Chalk -Board	
8	L23, L24			Safety Management System: Strategies for Implementation, Emergency Planning, Preparedness And Response At The City Level	R10, R11	CO2, CO3		PPT Digi Class/ Chalk -Board	
9	L25 L26	4		Capacity building of disaster management teams, Role of Financial Institutions in Mitigation Effort,	R10, R11	CO1, CO2		PPT Digi Class	
9, 10	L27, L28			Group Dynamics, Concept of Team Building, Motivation Theories and Applications, Community awareness and participation at various levels; Role of NGOs/CBOs and communities in disaster education	R10, R11	CO1, CO2		PPT Digi Class	
10	L29,L 30			Relevance of disaster management with	R10, R11	CO1		PPT Digi	

				relevant to development and environment; School Awareness and Safety Programmes;				Class	
11	L31, L32			Use of technology and media for spreading disaster awareness. Role of Media in Disasters;	R5, R8,	CO1		PPT Digi Class	
11, 12	L33,L 34			Principles and Methods of Community Based Approaches for Urban Disaster Management; Community Based Disaster Management Practice; Building Community Capability; Education and Training on Mitigation and Emergency Planning	R10, R11	CO1, CO3		PPT Digi Class	
12	L35, L36			UNs mandate for disaster management; UN-Disaster Management Team and their role in disaster management.	R2, R4	CO1		PPT Digi Class	
12, 13	L37, L38			International Landmarks in Disaster Management: International decade for Disaster Risk Reduction; Hyogo Framework; Sendai Framework.	R2, R4	CO1, CO3		PPT Digi Class	
13, 14	L39, L40			Overview and mandate of India's Disaster Management Act, 2005; Legal and Institutional Framework for Disaster Management in India;	R9, R12	CO1		PPT Digi Class	
14	L41, 42			Mandate of National Disaster Management Authority (NDMA) of India; India's National Disaster Management Plan (2016), Institutional involvement and policy institutes.	R9, R12	CO1, CO3		PPT Digi Class	

COURSE INFORMATION SHEET

Course code **:** AR 605
Course title : Urban Ecology and Environmental Planning
Pre-requisite(s) **:** None
Co- requisite(s) **:** None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week **:** 03
Class **:** MUP
Semester / Level **:** I
Branch **:** Architecture
Name of Teacher **:** Dr. Smriti Mishra

Course Objectives
This course enables the students:

A.	To understand and discuss how humans are components of urban ecosystems
B.	To be aware of the impact of urbanization and industrialization on natural environment
C.	To introduce the concepts and theories of ecology in urban context
D.	To explain the principles and strategies for natural resource conservation and management and the associated conflicts.
E.	To gain knowledge on evaluating the environmental impacts of urban development
F.	To be aware of best practices in urban-planning related to urban ecological planning.

Course Outcomes
After the completion of this course, students will be able:

1.	To gain a wider understanding of urban ecological and environmental issues and appreciate potential approaches for cities to deal with ecological and environmental challenges and threats.
2.	To enhance abilities and skills relating to evaluation of environmental impacts of urban development.
3.	To make scientifically informed decisions about environmental issues related to urban areas

Syllabus

Module 1: Man-Environment Relationship and Concept of Urban Ecosystem
Man, and Environment - Changing Perspectives in Man-Environment Relationship with Focus on Issues of Population, Urbanization, Resource Depletion and Pollution, Concepts of Ecology and fundamentals of ecosystem; Components of natural and built environment, Eco-systems and their relevance to environment, resources and human settlements, Environmental Zones (Hill, coastal, arid, characteristics, resources, settlements pattern, problems and potentials. Impact of urbanization and industrialization on nature and modifications in natural environment, causes and consequences, Issues of the urban environment: pedestrian-vehicular conflict, City Centre Environment, Housing areas, dereliction, Urban climatology and thermal pollution, factors causing heat sink effects, direct radiation, climatic effects on urban areas, Need for urban ecosystem approach, its evolution and significance. Resource analysis for various ecosystems and development imperatives (land, geology, soil, climate, water, vegetation) characteristics, exploitation, causative factors for degradation, analytical techniques.

Module 2: Ecological Principles in Planning
Concepts and relevance of Environmental Planning, Integrated resource planning approach, Preparation and analysis of resource inventories and resource matrices, Resource regions in India, their problems and potentials, Sustainability, and environmental criteria for location of human settlements, Ecological

parameters for planning at different levels: site planning, settlement planning and regional planning, Carrying Capacity Based Planning- Concept, Parameters, and Indicator Measures; Models and Case Studies in Urban and Regional Development

Module 3:EnvironmentalMonitoring and Impact Assessment

Air Pollution-sources, causes/pollutants and their effects, emission sources, vehicular emissions, techniques of monitoring of emissions, emission standards, and ambient air quality. Concepts of relevant meteorological parameters, and interpolation of data, wind system measurement, turbulence; mixing height, plume use, dispersion, and dispersion models. Air pollution mitigation and abatement. Water Pollution – sources, water quality tests, minimum standards of disposal (for different uses), performance criteria, Water pollution mitigation and abatement. Noise Pollution- sources, techniques of measurement, noise level standards, noise levels; Noise attenuation; EPA Guidelines, Land Pollution -sources, soil erodibility tests, minimum standards of disposal (minimum standards for different uses), performance criteria. Interpretation of analytical trends of various parameters of quality of environment.

Role of EIA in the planning and decision-making process; definition, need, evolution and objectives, tasks and scope; Methods of EIA; advantages and limitations; Assessment of impacts on resources (Including air, water, flora and fauna); Assessment of impacts on Land use; Case studies.Environmental Impact and Strategic Environmental Assessment for Urban Areas; Ecological Footprint Analysis of Cities; Sustainable Lifestyle Assessment

Module 4:Urban Environmental Management and Planning

Objectives of environmental planning and design, Integration of environmental assessments and planning options, Environmental management approach;

Environmental Protection Techniques: Role of Government and Non-Government Organizations in Environmental Protection; Best practices in Environmental Protection and Conservation; International Co-operation for Environmental Protection.

Environmental Management: Resource Management: Including management of land, water bodies and waterchannels, forests and wildlife, minerals; Management of Urban Areas; Management of sensitive areas – hills, coasts, arid, wetlands etc. (including participatory approaches); Management of Watersheds; Human activities and energy in cities; Contribution to GHGs

Appropriate Technologies and Applications: Techniques and case studies related to water harvesting, water treatment, recycling,waste disposal, waste minimization, and their implications, Low cost and cleaner technologies, Environmental Management in the Indian context;

Module 5: Environmental Legislation, Policies and Practices:

Global concerns for environment and bio-diversity, International Environmental Policies and initiatives including policies, strategies, protocols, treaties, and agreements; Overview of Government of India's policies.

Text books:

T1 - Odum, E.P., Barrett, G.W., Brewer, R., Fundamentals of Ecology, Thomson Brooks,
T2 - Westman W., Ecology, Impact Assessment and Environmental Planning, JohnWiley and Sons
T3 - James K. Lein, Integrated Environmental Planning, Blackwell Publishing

Reference books:

R1 - Paul R. Ehrlich et al. Ecoscience: Population, Resources, Environment,
R2 - O. L. Gilbert, Chapman & Hall, The ecology of urban habitats,
R3 - Michael Hough, Cities and Natural Process: A Basis for Sustainability,
R4 - AITP Reader on Ecology & Resource Development, AITP
R5 - Prof A. K. Maitra, AITP Reading Material on Environmental Planning and Design, SPA Delhi
R6 - Gadgil, M. and Guha, R Ecology and Equity - The Use and Abuse of Nature in Contemporary India, Penguin

R7 - Bahuguna, S., Natraj, Environment Crisis and Sustainable Development, Dehradun,
R8 - Agarwal, S.K. and Garg, R.K (eds), Environmental Issues and Researches in India, Himanshu Publications
R9 - Divan, S. and Rosencranz A., Environmental Law and Policy in India - Cases Materials and Statutes, Oxford
R10 - Hardoy, J.E., Mitlin, D., and Satterthwaite ,D., Environmental Problems in Third World Cities, Earthscan
R11 - Wilson Richards & Jones Willium Energy, Ecology & Environment,
R12 - McEnro James Handbook of Environmental Planning,
R13 - Lein, J. K. Integrated Environmental Planning,
R14 - Khanna, D.D. Sustainable Development,
R15 - Frank, R. G. &Frank, D. N Man & the changing Environment,

Gaps in the syllabus (to meet Industry/Profession requirements): Nil

POs met through Gaps in the Syllabus: NA

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	L	H	M	L	H	H
2	M	H	H	H	H	H
3	H	H	H	H	H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO2
CD3	Seminars	CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tenta-tive Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Method-ology used	Remarks by faculty if any
1	L1,			Man, and Environment - Changing Perspectives in Man-Environment Relationship with Focus on Issues of Population, Urbanization, Resource Depletion and Pollution,	T1	CO1,		Chalk -Board	
1	L2			Concepts of Ecology and fundamentals of ecosystem; Components of natural and built environment, Eco-systems and their relevance to environment, resources and human settlements,	T1, T2, R1	CO1,		Chalk -Board	
1, 2	L3, L4			Environmental Zones (Hill, coastal, arid, characteristics, resources, settlements pattern, problems and potentials. Impact of urbanization and industrialization on	T1, T2 R1 R3	CO1, CO3		PPT Digi Class/ Chalk -Board	

				nature and modifications in natural environment, causes and consequences,Issues of the urban environment: pedestrian-vehicular conflict, City Centre Environment, Housing areas, dereliction, Urban climatology and thermal pollution, factors causing heat sink effects, direct radiation, climatic effects on urban areas,					
2	L5, L6,			Need for urban ecosystem approach, its evolution and significance.	T1, T2 R3,	CO1, CO2		PPT Digi Class	
3	L7, L8			Resource analysis for various ecosystems and development imperatives (land, geology, soil, climate, water, vegetation) characteristics, exploitation, causative factors for degradation, analytical techniques.	T1, T2, R4	CO1, CO2		PPT Digi Class	
3, 4	L9, L10,			Concepts and relevance of Environmental Planning, Integrated resource planning approach, Preparation and analysis of resource inventories and resource matrices,	T1, T2, R2	CO1, CO2		PPT Digi Class	
4	L11,			Resource regions in India, their problems and potentials,	T1, R2, R5	CO1, CO2		PPT Digi Class	
4	L12,			Sustainability, and environmental criteria for location of human settlements, Ecological parameters for planning at different levels: site planning, settlement planning and regional planning,					
5	L13,			Carrying Capacity Based Planning- Concept, Parameters, and Indicator Measures	T2, T3, R12	CO1, CO2, CO3			

5	L14, L15			Models and Case Studies in Urban and Regional Development	T1, T2, R5	CO1, CO2, CO3		PPT Digi Class	
Quiz 1									
6	L16 L17			Air Pollution-sources, causes/pollutants and their effects, emission sources, emission standards, and ambient air quality.	R4, R5,	CO1, CO2, CO3		Chalk -Board	
6	L18,			Air pollution mitigation and abatement.	T1, T2, R5	CO1, CO2,		PPT Digi Class	
7	L19, L20			Water Pollution – sources, water quality tests, minimum standards of disposal (for different uses), performance criteria, Water pollution mitigation and abatement.	T1, T2, R5	CO1, CO2, CO3		PPT Digi Class	
7	L21			Noise Pollution- sources, techniques of measurement, noise level standards, noise levels; Noise attenuation; EPA Guidelines, Land Pollution -sources, soil erodibility tests, minimum standards of disposal (minimum standards for different uses), performance criteria.	T1, T2, R3 R5	CO1 , CO2		PPT Digi Class/ Chalk -Board	
8	L22, L23			Interpretation of analytical trends of various parameters of quality of environment.	T1, T2, R1 R3	CO1, CO2		PPT Digi Class	
8, 9	L24 L25			Role of EIA in the planning and decision-making process; definition, need, evolution and objectives, tasks and scope; Methods of EIA; advantages and limitations;	T1, T2, R3 R5	CO1, CO2		PPT Digi Class/ Chalk -Board	
9,	L26, L27			Assessment of impacts on resources (Including air, water, flora and fauna);	T1, T2, R5	CO1, CO2		PPT Digi Class/ Chalk -Board	
10	L28,			Assessment of impacts on	T1,	CO1,		PPT	

	L29			Land use; Case studies. Environmental Impact and Strategic Environmental Assessment for Urban Areas;	T2, R6	CO2, CO3		Digi Class	
10	L30			Ecological Footprint Analysis of Cities; Sustainable Lifestyle Assessment	T1, T2	CO3, CO4		PPT Digi Class/ Chalk -Board	
Quiz 2									
11	L31, L32			Objectives of environmental planning and design, Integration of environmental assessments and planning options, Environmental management approach; Environmental Protection Techniques: Role of Government and Non-Government Organizations in Environmental Protection; Best practices in Environmental Protection and Conservation; International Co-operation for Environmental Protection	T3, R5 R12 R15	CO1, CO2 CO3		PPT Digi Class/ Chalk -Board	
11, 12	L33, L34			Environmental Management: Resource Management: Including management of land, water bodies and water channels, forests and wildlife, minerals; Management of Urban Areas; Management of sensitive areas – hills, coasts, arid, wetlands etc. (including participatory approaches); Management of Watersheds;	R1, R6	CO1,, CO2, CO3		PPT Digi Class/ Chalk -Board	
12	L35, L36			Human activities and energy in cities; Contribution to GHGs	R10, R11	CO1, CO2		PPT Digi Class/ Chalk	

								-Board	
13	L37			Appropriate Technologies and Applications: Techniques and case studies related to water harvesting, water treatment, recycling, waste disposal, waste minimization, and their implications,	R15	CO1, CO2, CO3		PPT Digi Class/ Chalk -Board	
13	L38			Low cost and cleaner technologies, Environmental Management in the Indian context;	R15	CO1, CO2, CO3		PPT Digi Class/ Chalk -Board	
Quiz 3									
14	L39, L40			Global concerns for environment and bio-diversity, International Environmental Policies and initiatives including policies, strategies, protocols, treaties, and agreements;	R7, R14	CO1		PPT Digi Class/ Chalk -Board	
14	L41, L42			Overview of Government of India's policies.	R8, R9	CO1,		PPT Digi Class/ Chalk -Board	

COURSE INFORMATION SHEET

Course code : AR 611
Course title : Planning Studio / Workshop I (With Field study)
Pre-requisite(s) : None
Co- requisite(s) : None
Credits : 04 L:0 T:0 P:8
Class schedule per week : 08
Class : M.U.P.
Semester / Level : I
Branch : Architecture
Name of Teacher : Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A.	To introduce students to urban planning parameters, land-use interaction studies, policies and strategies that seek to define the role of planning in a small urban area,
B.	To guide students to identification of needs of a community through socio-economic and physical survey, including updating of given base map.
C.	To provide students with opportunities to make decision and conceptualize projects that will improve the socio-economic condition of a delineated area

Course Outcomes
After the completion of this course, students will be able to:

1.	Explain the parameters that govern the development of urban areas;
2.	Recognize urban problems and factors responsible;
3.	Prepare comprehensive socio-economic questionnaire for urban planning;
4.	Develop landuse strategies and concepts for urban areas;

Syllabus
The students will be exposed to the following assignments covered over specific period of time

	Time of completion
Assignment 1 Study to differentiate between an existing planned and unplanned city base on level of infrastructure, services, demography and governance based on purely secondary data.	3 weeks
Assignment 2 (Group work) Study of an existing ward based on primary socio-economic, infrastructure and landuse survey.	4 weeks
Assignment 3 Redesigning the existing ward studied in assignment 2	4 weeks
Assignment 4 Redesigning an existing class 1 city.	3 weeks

Text books:
T1 - Kevin Lynch, Good City Form, MIT Press
T2 - Edmund N. Bacon, Design of Cities, Penguin publishers

Reference books:

R1 - URDPFI Guidelines, Government of India, Ministry of Housing and Urban Affairs

R2 - Various City Development Plans under JNNURM
R3 - Gallent Robinson, Neighbourhood Planning: Communities, Networks and Governance, Policy Press
R4 - Praja.org. Handbook of Urban laws and Policies that Impact Housing,

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Seminars
CD2	Mini projects/Projects
CD3	Laboratory experiments/teaching aids
CD4	Industrial/guest lectures
CD5	Self- learning such as use of NPTEL materials and internets

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**	**Individual components of tool**	**% Contribution during CO Assessment**
Progressive Evaluation	60	Day to Day performance	30
		Quiz	10
		Viva	20
End Sem Evaluation	40	Examination performance	30
		Quiz	10

Assessment Components	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Progressive Evaluation	√	√	√	√	√
End Sem Evaluation	√	√	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H	M		H	L	
2	H	H	M			M
3		M	H	H	M	
4	H	H	L	L		H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Seminars	CO1, CO4
CD2	Mini projects/Projects	CO2, CO3, CO4,
CD3	Laboratory experiments/teaching aids	CO2, CO3, CO4,
CD4	Industrial/guest lectures	CO3, CO4,
CD5	Self- learning such as use of NPTEL materials and internets	CO1, CO2

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	1-6			Assignment 1	T-2, R-1	CO1, CO2	Introduction to the problem and secondary data collection	Computerised formats	
2-3	7-17			Assignment 1	T-2, R-1	CO1, CO2, CO3	Collation of data collection in graphical format	Computerised formats	
3	18			Internal evaluation of progress					
4	19-24			Assignment 2	T-2, R-1	CO1, CO2, CO3	Data collection and survey of ward	Computerised formats	
5-7	25-41			Assignment 2			Collation and analysis of data	Computerised formats	
7	42			Internal evaluation of progress					
8-12	43-71			Assignment 3	T-1,2, R-1,2,3	CO4,	Detailed layout plan of the proposed ward	Computerised formats	
12	72			Internal evaluation of progress					

13-14	73-84			Assignment 4	T-1,2, R-1,2,3	CO4	Detailed layout plan of the proposed city	Computerised formats	
14	85			Internal evaluation of progress					

COURSE INFORMATION SHEET

Course code **:** AR 612
Course title **:** Urban Design
Pre-requisite(s) **:** None
Co- requisite(s) **:** Should have registered for Urban Design Theory (MUP 103)
Credits : 02 L: 0 T: 0 P: 4
Class schedule per week : 04
Class **:** M.U.P.
Semester / Level **:** I
Branch **:** Architecture
Name of Teacher **:** Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A	To develop concepts of urban design at various urban scales
B.	To engage in an effective design process; that entails holistic approach
C.	To apply and use of relevant urban design techniques considering legal tools;

Course Outcomes
After the completion of this course, students will be able:

1.	To demonstrate design capabilities in approaching urban design at various scales;
2.	To apply and use urban design knowledge contextually
3	To design live urban pockets / squares / blights taking local parameters and issues into consideration, adding contemporary layer to urban aesthetics

Syllabus
Studying, Analyzing & Designing the parts of city - central areas, the town center, civic spaces, shopping centers, Industrial Areas and estates, Residential areas & Housing so as to create an understanding of the role of various physical, social, economic and infrastructural components and decision making processes;

Text books:
T1. Bacon, E. N., Design of Cities, Penguin Publishers
T2. Cullen, G., Townscape, London Architectural Press
T3. Gallion A.B. & Simon Eisner, Urban Pattern City Planning and Design, CBS Publishers
T4. Fransesc Zamora; Source of Contemporary Urban Design, Harper Collins Publisher
T5. Kevin Lynch, Image of a city, MIT Press
T6. Spreiregen, Paul. D., Urban Design: The architecture of towns & cities

Reference books:
R1 - Donald Watson, Alan J. Plattus, Robert G. Shibley; Time-saver standards for urban design, McGraw-Hill
R2 - Stephen Marshall, Streets and Patterns, Routledge.

Gaps in the syllabus (to meet Industry/Profession requirements): Nil

POs met through Gaps in the Syllabus: Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Seminars
CD2	Mini projects/Projects
CD3	Laboratory experiments/teaching aids
CD4	Industrial/guest lectures
CD5	Self- learning such as use of NPTEL materials and internets

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**	**Individual components of tool**	**% Contribution during CO Assessment**
Progressive Evaluation	60	Day to Day performance	30
		Quiz	10
		Viva	20
End Sem Evaluation	40	Examination performance	30
		Quiz	10

Assessment Components	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Progressive Evaluation	√	√	√	√	√
End Sem Evaluation	√	√	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H	M	M	H	M	L
2	H	H	M	H	M	
3		H	H	H	M	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Seminars	CO1, CO2, CO3
CD2	Mini projects/Projects	CO2, CO3,
CD3	Laboratory experiments/teaching aids	CO1, CO2, CO3,

CD4	Industrial/guest lectures	CO3,
CD5	Self- learning such as use of NPTEL materials and internets	CO1

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1-2	1-12			Field excursion for 2 weeks	T-1,2, R-1	CO1, CO2	Data collection	Computerised formats	
3 -4	13 - 24			Collation of data collection	T-1,2, 3 R-1	CO1, CO2, CO3	In graphical format	Computerised formats	
5	25			Internal evaluation of progress					
5-9	26-54			Analysis and design alternatives	T-1,2,3,4,5, 6 R-1,2	CO1, CO2, CO3	Details of design alternatives	Computerised formats	
9	55			Internal evaluation of progress					
10-13	56-78			Final design proposal	T-1,2,3,4,5, 6 R-1,2	CO4, CO5,	Detailed proposal	Computerised formats and hard copy	
14				Internal evaluation of progress					

SEMESTER II

COURSE INFORMATION SHEET

Course code : AR 651
Course title : Planning Legislation & Professional Practice
Pre-requisite(s) : Nil
Co- requisite(s) : Nil
Credits : 03 L: 3 T:0 P: 0
Class schedule per week : 03
Class : M.U.P.
Semester / Level : II
Branch : Architecture
Name of Teacher : Dr .D.J. Biswas

Course Objectives
This course enables the students:

A	To introduce the subject along with various aspects planning legislations affect the activities related to urban planning
B.	To familiarize with various planning legislations related to environment as well as construction industries in India
C.	To introduce various aspects related to the profession of urban planner, along with role and responsibilities of consultant including social responsibilities and professional ethics.

Course Outcomes
After the completion of this course, students will be able to:

1.	Understand the relevance and importance of various planning acts and guidelines.
2.	Develop the basic skill to prepare planning proposals considering all the acts and regulations affecting the project area
3	Behave judiciously and sympathetically for making planning proposals within the guideline laid down by the professional body and with due respect to professional ethics

Syllabus
Module 1: Evolution of planning legislation in India:
The meaning, significance and objectives of planning legislation. An overview of legal tools connected with urban planning & development. Town & Country Planning Organization, Development Authorities - objectives, contents and procedures for preparation & implementation of Regional Plans, Development Plans, Master Plan and Town-planning schemes.

Module 2: Development Control:
Necessity and significance of Land Development Control – objectives and legal tools, critical evaluation of Zoning, sub-division regulations, building regulations and byelaws.

Module 3: Land Acquisition Act:
Land Acquisition Act of India, its necessity, provision and limitation. Urban Land (Ceiling & Regulation) Act – objectives, contents & planning implications.

Module 4: Various other acts and regulations affect the urban development:
In order to execute any urban development project in India, the proposal needs to be cleared from various types of authorities, which may be applicable in general or in those specific urban areas. Thus an urban

planner has to be exposed to all those environment related as well as construction related acts and regulations.

Module 5: Role of Professional Body in the field of Urban Planning:
Necessity and role of such Professional body in India and abroad. In case of India, the working system, constitution and bye laws, categories of membership, election procedures, Role of its conventions, its publications, etc .role and responsibility of planning consultants, professional ethics, code of conduct and scale of professional charges

Reference books:

R1 - UDPFI Guidelines, 1996, published by: Ministry of Urban Development Government of India
R2 - Bharadwaj RK, The Municipal administration in India: A Sociological analysis of rural & urban India.
R3 - Guide to practical project appraisal, Social benefit, Cost analysis in Developing Countries, published by: United Nation

Gaps in the syllabus (to meet Industry/Profession requirements): Nil

POs met through Gaps in the Syllabus: NA

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Course Outcome #	Program Outcomes					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H		H		H	M
2	H		H	M	M	
3	M	L	H		H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2
CD2	Tutorials/Assignments	CO2
CD3	Seminars	CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Wk. No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	1			Significance and objectives of planning legislation	R1	CO1		Chalk boards/LCD projectors	
1	2,3			-do-	-do-	-do-		-do-	
2	4			Various Development authorities in India and their functioning	R1, R3	CO1, CO2		-do-	
2	5,6			-do-	-do-	-do-		-do-	
3	7			An overview of legal tools connected with urban planning & development	R1, R2	CO1, CO2		-do-	
3	8,9			Procedures for preparation & implementation of Regional Plans, Master Plan, Developmt Plans	R1, R3	CO2, CO3		-do-	
4	10			Necessity and significance of Land Development Control	R1, R3	CO1, CO3		-do-	

4	11,12			-do-	-do-	-do-		-do-	
5	13			Critical evaluation of Zoning, sub-division regulations,	R1, R3	-do-		-do-	
5	14,15			-do-	-do-	-do-		-do-	
6	16			Planning regulations and byelaws	-do-	-do-		-do-	
6	17,18			Building regulations and byelaws	-do-	-do-		-do-	
7	19			Land Acquisition Act of India, its requirement	R3	CO3		-do-	
7	20,21			-do-	-do-	-do-		-do-	
8	22			Urban Land (Ceiling & Regulation) Act	R1,R2 R3	CO2, CO3		-do-	
8	23,24			Urban Local authorities in India	-do-	-do-		-do-	
9	25			Its governance and applicability in Urban development	-do-	-do-		-do-	
9	26,27			Approval process in Urban development proposals	-do-	-do-		-do-	
10	28			Other relevant acts in India	-do-	-do-		-do-	
10	29,30			-do-					
11	31			Relevance and application of all those acts in urban planning	-do-	-do-		-do-	
11	32,33			-do-					
12	34			Definition and requirement of Professional Body	R2,R3	CO2		-do-	
12	35,36			The working system, constitution and bye laws	-do-	-do-		-do-	
13	37			Membership requirement	-do-	-do-		-do-	
13	38,39			Professional and Social responsibility	-do-	-do-		-do-	
14	40			Quiz 1*					
14	41,42			Quiz 2 & 3*					

COURSE INFORMATION SHEET

Course code : AR 652
Course title : Housing and Community Planning
Pre-requisite(s) : None.
Co- requisite(s) : None
Credits : 03 L: 3 T: 0 P:0
Class schedule per week : 03
Class : MUP
Semester / Level : II
Branch : Architecture
Name of Teacher : Prof. Rajan Chandra Sinha

Course Objectives

This course enables the students:

A.	To familiarize with a wide spectrum of aspects related to housing viz., housing scenario, housing needs, housing design, building legislations and relevant methods for formulating housing strategies.
B.	To gain basic knowledge of issues of urban development relevant to housing planning in India.
C.	to explain the issues involved with changing contextual policies for housing and generalize the new directions of opportunities
D.	To apply the standards, norms and statutory regulations affecting the housing development and design of housing neighbourhoods.

Course Outcomes

After the completion of this course, students will be:

1.	To define basic elements of housing, neighbourhood, community and slums
2.	To appraise various housing policies and programmes
3.	To explain housing typologies or differentiate community design in terms of local context (Physical, economical, socio-cultural, ecological, environmental aspects)
4.	To illustrate the process for housing planning
5.	To Apply zoning regulations and sub-division techniques and computation for density, FAR, built-up area, as per development norms.

Syllabus

Module 1: Introduction to Housing
Definition & concept of Housing, Housing typologies, Form of Housing provision (Plotted, Group Housing, Cooperative, Self Help, Leasehold, Freehold / Condominium, Rental Housing etc.) and Special Housing types (Barrier free, Mobile homes, congregate housing for assisted living, disaster housing, Student & public housing, Guest house, Night shelters, Incremental Housing etc.). Theories and approaches to housing

Module 2: Housing and City
Understanding housing as an important land use component of city plan / master plan, considerations for carrying out city level housing studies, projections, land use provisions. Suitability of land for housing, housing stress identification, projecting housing requirements, calculating housing shortages, housing allocation.

Understanding the causes of growth of Slums, Squatter settlements & Urban sprawl, Types and generic characteristics of slums, An overview of measures & approaches to slums & squatter settlements, Objectives of National Slum Policy (2002), Concept of few schemes e.g.: Site & Services, EIUS, BSUP, VAMBAY, IHSDP.

Module 3: Affordable Housing, new trends & Housing Policy
Components of Housing Cost & approach for affordable housing, Characteristics of Urban housing vis-à-vis Rural housing, Goals, Objectives & contents of National Housing & Habitat Policy (2007), Examples of housing schemes & programmes e.g., IAY, IHSDP etc.

Module 4:Planning for Neighbourhoods
Approaches to neighbourhood living in traditional and contemporary societies, elements of neighbourhood structure, Planning and design criteria for modern neighbourhoods, norms and criteria for area distribution, housing and area planning standards, net residential density and gross residential density, development controls and building byelaws, URDPFI guidelines, NBC 2005provisions.

Module 5: Norms& Standards for Urban & Housing Development
Town & Residential density, FAR, Different types of codes/ norms affecting settlement development planning, Land –use Classification & compatibility of uses (e.g., compatible uses in residential zone), Factors affecting space standards / land requirements for facilities, Land area requirement for different uses in a town & for community facility in a sector/ residential planning area, Design Considerations based on subdivision norms / regulations.

Text books:
T1 – Modak & Ambedkar; *Town & Country Planning & Housing*
T2 - Bawa R. L., Fernandes B. G.*; Design for Living: A Guide for Planning of Residential Neighbourhoods; Galgotia Publishing Company; N. Delhi*
T3 - Abrams, C., *Housing and town and country planning: Urban land Problems and Policies*
T4 - Payne, G. K., *Urban Housing in Third World*

Reference books:
R1 - Financing of Housing and community Improvement Programmers / United Nation
R2 - Poulose K T(compiled); *Reading Material on Housing; Institute of Town Planners, India; New Delhi;*
R3 - URDPFI guidelines.
R4 - National Building Code,

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design : Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	% Contribution during CO Assessment
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	CO1	CO2	CO3
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	PO2	PO3	PO4	PO5	PO6
1	M	L	M	M	M	L
2	M	-	H	L	H	M
3	H	H	H	M	M	M
4	H	H	H	H	H	H
5	H	H	H	H	H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2
CD2	Tutorials/Assignments	CO2
CD3	Seminars	CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if

									any
1	L1			Definition & concept of Housing, Housing typologies	T3, R2	CO1, CO3		PPT Digi Class/Cho ck -Board	
1	L2			Form of Housing provision	T3, R2	CO1, CO3		PPT Digi Class/Cho ck -Board	
1	L3			Special Housing types	T3, R2	CO1, CO3		PPT Digi Class/Cho ck -Board	
2	L4			Theories and approaches to housing	T1, R2	CO4		PPT Digi Class/Cho ck -Board	
2	L5			Theories and approaches to housing	T1, R2	CO4		PPT Digi Class/Cho ck -Board	
2	L6			Understanding housing as an important land use component of cityplan / master plan	T1, R2, R3	CO3, CO4		PPT Digi Class/Cho ck -Board	
3	L7			Considerations for carrying out city level housing studies	T1, T2, T3, R2	CO1, CO2, CO3, CO4		PPT Digi Class/Cho ck -Board	
3	L8			Projections, land use provisions. Suitability of land for housing	T1, T4, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	
3	L9			Housing stress identification, projecting housing requirements	T1, T4, R3	CO4, CO5		PPT Digi Class/Cho ck -Board	
4	L10			calculating housing shortages, housing allocation.	T1, T4, R3	CO4, CO5		PPT Digi Class/Cho ck -Board	
4	L11			Understanding the causes of growth of Slums	T1, T3, R1	CO2, CO3		PPT Digi Class/Cho ck -Board	
4	L12			Squatter settlements & Urban sprawl	T1, T3, R1	CO2, CO3		PPT Digi Class/Cho ck -Board	
5	L13			Types and generic characteristics of slums	T1, T3,	CO2, CO3		PPT Digi Class/Cho	

					R1			ck -Board	
5	L14			1ST QUIZ (COMPRISING LECTURES 1 TO 13)		CO1, CO2, CO3, CO4, CO5			
5	L15			An overview of measures & approaches to slums & squatter settlements	T1, T3, R1	CO2, CO3		PPT Digi Class/Cho ck -Board	
6	L16			Objectives of National Slum Policy (2002)	T1, T3, R1	CO2, CO3		PPT Digi Class/Cho ck -Board	
6	L17			Concept of few schemes e.g.: Site & Services, EIUS, BSUP, VAMBAY, IHSDP.	T1, T3, R1	CO2, CO3		PPT Digi Class/Cho ck -Board	
6	L18			Components of Housing Cost	T4, R2	CO3		PPT Digi Class/Cho ck -Board	
7	L19			Approach for affordable housing	T2, T3, R2	CO3, CO4		PPT Digi Class/Cho ck -Board	
7	L20			Characteristics of Urban housing vis-à-vis Rural housing	T2, T3, R2	CO3, CO4		PPT Digi Class/Cho ck -Board	
7	L21			Characteristics of Urban housing vis-à-vis Rural housing	T2, T3, R2	CO3, CO4		PPT Digi Class/Cho ck -Board	
8	L22			Goals, Objectives & contents of National Housing & Habitat Policy (2007)	R3	CO2, CO4		PPT Digi Class/Cho ck -Board	
8	L23			Goals, Objectives & contents of National Housing & Habitat Policy (2007)	R3	CO2, CO4		PPT Digi Class/Cho ck -Board	
8	L24			Goals, Objectives & contents of National Housing & Habitat Policy (2007)	R3	CO2, CO4		PPT Digi Class/Cho ck -Board	
9	L25			Examples of housing schemes & programmes e.g., IAY, IHSDP etc.	R3	CO2, CO4		PPT Digi Class/Cho ck -Board	
9	L26			Examples of housing schemes &	R3	CO2, CO4		PPT Digi Class/Cho	

				programmes e.g., IAY, IHSDP etc.				ck -Board	
9	L27			2^{ND} QUIZ(COMPRISING LECTURES 15 TO 26)		CO1, CO2, CO3, CO4			
10	L28			Approaches to neighbourhood	T2, R2, R3	CO1, CO3		PPT Digi Class/Cho ck -Board	
10	L29			Approaches to neighbourhood	T2, R2, R3	CO1, CO3		PPT Digi Class/Cho ck -Board	
10	L30			Elements of neighbourhood structure	T2, R2, R3	CO1, CO3		PPT Digi Class/Cho ck -Board	
11	L31			Planning and design criteria for modern neighbourhoods	T2, R2, R3	CO1, CO3		PPT Digi Class/Cho ck -Board	
11	L32			Norms andcriteria for area distribution	T2, R2, R3	CO1, CO3		PPT Digi Class/Cho ck -Board	
11	L33			Housing and area planning standards	T2, R2, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	
12	L34			Net residential density and gross residential density, development controls and building byelaws	T2, R2, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	
12	L35			URDPFI guidelines, NBC 2005provisions.	R2, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	
12	L36			Town & Residential density, FAR, Different types of codes/ norms affecting settlement development planning	T2, R2, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	
13	L37			Land –use Classification & compatibility of uses	T2, R2, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	
13	L38			Factors affecting space standards / land requirements for facilities	T2, R2, R3	CO3, CO5		PPT Digi Class/Cho ck -Board	

13	L39			Land area requirement for different uses in a town & for community facility in a sector/ residential planning area	T2, R2, R3	CO3, CO5		PPT Digi Class/Chock -Board	
14	L40			Design Considerations based on subdivision norms / regulations.	T2, R2, R3	CO3, CO5		PPT Digi Class/Chock -Board	
14	L41			Design Considerations based on subdivision norms / regulations.	T2, R2, R3	CO3, CO5		PPT Digi Class/Chock -Board	
14	L42			3^{RD} QUIZ (COMPRISING LECTURES 28 TO 41)		CO1, CO3, CO5		PPT Digi Class/Chock -Board	

COURSE INFORMATION SHEET

Course code : AR 653
Course title : Urban Infrastructure Planning
Pre-requisite(s) : None
Co- requisite(s) : None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class : MUP
Semester / Level : II
Branch : Architecture
Name of Teacher : Dr. Bimal Chandra Roy

Course Objectives
This course enables the students:

A.	To classify the various urban infrastructures with their significance and importance
B.	To identify the latest technological innovations and their suitability for a particular infrastructure
C.	To familiarize with the environment and legal aspects of urban infrastructure planning
D.	To synthesize the knowledge and skills acquired, in the design of infrastructure and services related to water supply, storm water management, waste water management and solid waste management

Course Outcomes
After the completion of this course, students will be able to:

1.	Classify urban infrastructures with their significance and importance
2.	Identifythe latest technological innovations and their suitability for a particular infrastructure
3.	Explain about the various legal and environmental aspects of urban infrastructure planning
4.	Adopted in the design of the various infrastructure and services related to water supply, storm water management, waste water management and solid waste management

Syllabus

Module 1: Introduction
Elements of infrastructure (physical, social, utilities and services), definitions, concepts, significance and importance for public health and environmental protection; familiarizing to CPHEEO Manual

Module 2: Water and storm water management system
Sources of water, quality and quantity requirements, treatment and storage, treatment plant location, transportation and distribution; Storm water – rainfall data interpretation, storm water collection and disposal, water harvesting, recycling and reuse.

Module 3: Waste water management systems
Separate and combined systems; characteristics of waste water; Industrial pollutants and their effects; waste water treatment methods; planning and location of treatment plants; disposal of municipal and industrial effluents, effects of rivers and water bodies; legal aspects.

Module 4: Solid waste management system
Elements of solid wastes management, classification and properties of solid wastes, on site collection, storage, transportation and disposal of solid wastes, processing and treatment of solid wastes, various social and legal aspects of the solid waste management.

Module 5: Power supply and telecommunications system
Sources of electricity, transmission, distribution and supply; sustainable energy planning, planning approaches for telecommunication infrastructure and network systems; environmental, social and economic impacts of telecommunication infrastructure.

Text books:

T1 - Howard S. Peavy, Environmental Engineering, Tata McGrawhill
T2 - Goodman, A.S. and Hastak, M., "Infrastructure Planning Handbook: Planning Engineering and Economics", New York: ASCE Press.

Reference books:

R1 - S. K. Garg, Water Supply Engineering, Khanna Publishers
R2 - Arun Kumar Jain, Ashok Kumar Jain, B. C. Punmia, Water Supply Engineering: Environmental Engineering – I, Laxmi Publications
R3 - CPHEEO Manual on Sewerage and Sewage Treatment,
R4 - Zaini, U. and Mogens, H., "Municipal Wastewater Management in Developing Countries", Elsevier.
R5 - Dragan, S., "Sustainable Water Management Solutions for Large Cities", IAHS Publication.
R6 - Tchobanoglous, G., "Integrated Solid Waste Management: Engineering Principles and Management Issues", McGraw Hill.
R7 - Baum, V., "Energy Planning in Developing Countries", Australian Govt. Publishing Service.
R8 - Amani Omer, Telecommunication Management Networks (TMN) Implementation, Lambert Academic Publishers

Gaps in the syllabus (to meet Industry/Profession requirements): Nil

POs met through Gaps in the Syllabus: NA

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√

Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	PO2	PO3	PO4	PO5	PO6
1	H	H	L			
2	H	H	H	H		H
3	H	M	H	L	H	M
4	H	H	H	H	H	M

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO3, CO4
CD3	Seminars	CO3, CO4
CD4	Industrial/guest lectures	CO3, CO4

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	L1			Elements of infrastructure (physical, social, utilities and services),	T1, T2	CO1, CO2		Chock -Board	
1	L2, L3			Definitions, concepts, significance and importance for public health and environmental protection with respect to urban infrastructure	T1, R1, R2	CO1		Chock -Board	
2	L4			Familiarizing to CPHEEO Manual and Guidance	R3	CO1, CO3		PPT Digi Class/Chock-Board	
2	L5, L6			Sources of water, quality and quantity	T1, R1,	CO2, CO4		PPT Digi Class/Choc	

				requirements	R2			k-Board	
3	L7, L8			Treatment and storage, transportation and distribution	T2, R1, R2	CO2, CO4		PPT Digi Class/Choc k-Board	
3	L9			Various factors to be considered for treatment plant location	T1, R1, R2	CO2, CO4		PPT Digi Class/Choc k-Board	
4	L10, L11			Transportation and distribution of the treated water	T1, R1, R2	CO2, CO4		PPT Digi Class/Choc k-Board	
4	L12			Storm water – rainfall data interpretation,	T1, R1, R2	CO2, CO4		PPT Digi Class/Choc k-Board	
5	L13, L14			Storm water collection and disposal various disposal system	T1, R1, R2	CO2, CO4		PPT Digi Class	
5	L15,			Need of water harvesting and the various methods, Recycling and reuse of water through water harvesting,	T1, R5	CO2, CO4		PPT Digi Class	
6				Quiz1, covering L1-L15		CO1, CO2, CO4			
6	L16, L17			Separate and combined systems of waste water management	T1, R4, R2	CO2, CO4		PPT Digi Class	
7	L18, L19			Various characteristics of domestic and industrial waste water	T1, R2,R 4,5,	CO3, CO4		PPT Digi Class/Choc k-Board	
7	L20			Industrial pollutants and their effects	T1, R2,R 4,5	CO3, CO4		PPT Digi Class/Choc k-Board	
8	L21, L22			Various waste water treatment methods	T1, R2,R 4, R5	CO2, CO3, CO4		PPT Digi Class/ Chock -Board	
8	L23			Various waste water treatment methods	T1, R2,R 4,5	CO2, CO3, CO4		PPT Digi Class/Choc k-Board	
9	L24, L25			Various waste water treatment methods	T1, R2,R 4,5	CO2, CO3, CO4		PPT Digi Class/Choc k-Board	
9	L26			Planning and location of treatment plants	T1, R2,R 4,5	CO2, CO4		PPT Digi Class/Choc k-Board	
10	L27, L28			Disposal of municipal and industrial effluents, effects of rivers and	T1, R2,R 4,	CO2, CO3		PPT Digi Class/ Chock	

				water bodies,legal aspects related to waste water management system.	R5			-Board	
10				Quiz2, covering L16-L28		CO1, CO2, CO4			
11	L29, L30			Elements of solid wastes management, classification and properties of solid wastes	T1, R6	CO2, CO3, CO4		PPT Digi Class	
11	L31			On site collection, storage	T1, R6	CO2, CO3, CO4		PPT Digi Class/ Chock -Board	
12	L32, L33			Transportation and disposal of solid wastes	T1, R6	CO2, CO3, CO4		Chock -Board	
12	L34			Various social and legal aspects of the solid waste management.	T1, R6	CO2, CO3, CO4		PPT Digi Class	
13	L35			Sources of electricity, transmission	T2, R7, R8	CO2, CO3, CO4		PPT Digi Class	
13	L36, L37			Basic approach to distribution and supply of electricity for domestic and industrial use, sustainable energy planning	T2, R7, R8	CO2, CO3, CO4		PPT Digi Class/ Chock -Board	
14	L38, L39			Approaches for telecommunication infrastructure and network systems, environmental, social and economic impacts of telecommunication infrastructure.	T2, R7, R8	CO2, CO3, CO4		PPT Digi Class/ Chock -Board	
14				Quiz3, covering L29-L39		CO1, CO2, CO3, CO4			

COURSE INFORMATION SHEET

Course code : AR 654
Course title : New Town Planning
Pre-requisite(s) : Nil
Co- requisite(s) : Nil
Credits : 03 L:3 T:0 P:0
Class schedule per week : 03
Class : MUP
Semester / Level : II
Branch : Architecture
Name of Teacher : Anila Smriti Surin

Course Objectives

This course enables the students:

A.	To develop an insight into the emerging planning concepts of development of towns.
B.	To familiarize the students with the innovations and new approaches of planning.
C.	To make students aware of the methods and aspects concern towards preparation of development plan specific to the need of the city or region for the present and future.
D.	To develop the knowledge towards the various programs and schemes of the government towards the development of the specific area as required

Course Outcomes

After the completion of this course, students will have:

1.	Ability to understand various emerging concepts of planning in India and abroad and the best practices.
2.	The professional knowledge, skills and techniques necessary to plan, manage and maintain a balanced and productive environment for a city.
3.	Capability to understand the need for Planning at various levels and groups & focusing on the area specific. The students will become familiar with the contents, approach and methodology of preparation of new concepts of town planning.
4.	The knowledge and awareness of the programmes and schemes made by the government and the challenges and issues occurring in the implementation.

Syllabus

Module 1:
Growth of cities and System of Cities, scale, complexity and its impact on national development, cities as engines of growth, cities as ecosystems, resources in cities. Economic attributes of activity location, economic forces in urban development; urban development pattern and trend. Prevailing concept of urban planning and development, contents of the study of a city/town. Concept of Newtown. History and need, process and implementation. Newtown planning in India and abroad Cases study. Planning concept and policy.

Module 2:
Planning strategies: Strategies and utopian city structure; Alternative future scenarios; Contributions from famous futurologists. Concepts for future settlements: Concepts, planning and design parameters; Growing needs of sustainable and ecologically appropriate developments.

Creative city: Introduction , definitions, principal and historical perspective of creative cities, identification of creative economy, industry and creative base for planning guidelines, vision, development strategies, mechanism in creative city planning.

Module 3:
Urban development patterns and smart growth policies. Smart growth and smart city in global context - characteristics and frameworks, challenges and case study. Compact city- concepts, principles, elements, policy tools, examples. Transit Oriented Development- components and benefits. Other new concepts worldwide, their characteristics and elements.

Module 4:
Emerging new Concepts of India and abroad: Smart City – Concepts, Elements, Features, planning approach and strategies, policy efforts in India; Inclusive planning- Concept and components, essential dimensions of inclusive planning; growth of informal sector, characteristics, linkages with formal sector, Planning interventions, Inclusive zoning, development and building regulations; Understanding inclusive growth concept, Schemes and programs by government.

Module 5:
Governing organization and there accountability. Use of available resources in the region, optimum mobilization of natural and manmade resources. Non-conventional energy resources, Industrial location. Human resource utilization- through schemes and use of PPP.

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Text books:

T1 - T. Campbell, Beyond smart cities: how cities network, learn and innovate, Earthscan, N. York.
T2 – Somik Lall, Planning, connecting and financing cities, World Bank, Washington DC.
T3 - A. Latham, Key concepts in Urban Geography, Sage, London.
T4 - Arunachalam, P. Special Economic Zone in India, Serials Publications, New Delhi
T5 - Stiftel. B., Dialogues in Urban and Regional Planning, Routledge, London
T6 - Lewis Keeble. 'Principles & Practice of Town and Country Planning', the Estates Gazette Ltd., London.
T7 - Melville Campbell Branch, 'Comprehensive Planning for the 21st Century: General Theory and Principles, Westport, Conn. Praeger,

Reference books:

R1 - Bhargava, G, Development of India's Urban, Rural and Regional Planning in the 21st Century Policy R1 -Perspective, Gyan Publishing House, New Delhi.
R2 - P. Chandra, Projects Planning, Analysis, Financing, Implementation and Review, Sage Publishers, New Delhi.
R3 - John L, Taylor and David G. Williams, 'Urban Planning Practice in Developing Countries, Pergamon Press, Oxford,

Gaps in the syllabus (to meet Industry/Profession requirements) :nil

POs met through Gaps in the Syllabus :nil

Topics beyond syllabus/Advanced topics/Design :nil

POs met through Topics beyond syllabus/Advanced topics/Design: nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	H		M		M	H
2	M	M	L		H	M
3	M	M		M		H
4	H	H		H		M

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO3, CO4
CD3	Seminars	CO3, CO4
CD4	Industrial/guest lectures	CO3, CO4

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / Refere nces	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	L1, L2, L3			Growth of cities and System of Cities, scale, complexity and its impact on national development,	T2, T5	CO1		PPT Digi Class	
2	L4, L5, L6			Cities as engines of growth, cities as ecosystems, resources in cities. Economic attributes of activity location, economic forces in urban development; urban development pattern and trend	T3, T5, R1	CO1, CO3		PPT Digi Class	
3	L7, L8			Prevailing concept of urban planning and development, contents of the study of a city/town.	T2, T3, T6, R1	CO1, CO4		PPT Digi Class/Chalk -Board	
3	L9, L10, L11			Concept of Newtown. History and need, process and implementation. Newtown	T1, T6, T7, R3	CO1, CO4		PPT Digi Class	

				planning in India and abroad Cases study. Planning concept and policy.					
4	L12, L13, L14			Concepts for future settlements: Concepts, planning and design parameters; Strategies and utopian city structure; Alternative future scenarios; Contributions from famous futurologists.	T1, T3, T6, T7	CO2, CO3		PPT Digi Class	
5	L15, L16			Growing needs of sustainable and ecologically appropriate developments.	T1, T4, T7	CO2		PPT Digi Class	
6	L17, L18, L19,			Creative city: Introduction , definitions, principal and historical perspective of creative cities, identification of creative economy, industry and creative base for planning guidelines, vision, development strategies, mechanism in	T2, T3, R1	CO1, CO3		PPT Digi Class/Chalk -Board	

				creative city planning					
7	L20, L21, L22			Urban development patterns and smart growth policies. Smart growth and smart city in global context - characteristics and frameworks, challenges and case study.	T1, T2, T4, R2	CO2, CO3		PPT Digi Class	
8	L23, L24			Compact city- concepts, principles, elements, policy tools, examples.	T6, T7	CO1, CO2, CO3		PPT Digi Class/Chalk -Board	
9	L25, L26			Transit Oriented Development- components and benefits. Other new concepts worldwide, their characteristics and elements.	T1, T7, R2, R3	CO1, CO3		PPT Digi Class	
10	L27, L28, L29			Emerging new Concepts of India and abroad:Smart City – Concepts, Elements, Features, planning approach and strategies, policy efforts in India;	T1, T7, R1, R2	CO1, CO2, CO4		PPT Digi Class/Chalk -Board	
11	L30,			Inclusive	T5,	CO1,		PPT Digi	

	L31, L32			planning- Concept and components, essential dimensions of inclusive planning; growth of informal sector, characteristics, linkages with formal sector, Planning interventions, Inclusive zoning, development and building regulations, ; Understanding inclusive growth concept,	T6, T7, R1, R3	CO2		Class	
12	L33, L34, L35			New town planning and development Schemes and programs by government	T1, T2, T4, R1, R3	CO3, CO4		PPT Digi Class	
13	L36, L37			Governing organization and there accountability in relation to the new town planning schemes and programs.	T2, T6, T7, R1	CO3, CO4		PPT Digi Class	
14	L38, L39, L40			Use of available resources in the region, optimum mobilization of natural and manmade	T1, T2, T4, T7, R2	CO2, CO3		PPT Digi Class	

				resources. Non conventional energy resources, Industrial location. Human resource utilization- through schemes and use of PPP.					

COURSE INFORMATION SHEET

Course code **:** AR 655
Course title : Regional and Rural Planning
Pre-requisite(s) **:** None
Co- requisite(s) **:** None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class **:** MUP
Semester / Level **:** II
Branch **:** Architecture
Name of Teacher : Ritu Agrawal

Course Objectives
This course enables the students:

A	To understand the basic concepts of regions, regional development issues, various theories and methods and regional and rural development strategies.
B.	To develop and appreciate the basic fundamentals of rural and district planning.
C.	To gain knowledge about socio-economic, physical and institutional framework for rural planning and development.
D.	To be sensitive to the notion of regional planning policies and rural planning policies.
E.	To enhance the understanding of principles of regional planning, district planning and rural planning.

Course Outcomes
After the completion of this course, students will be able:

1.	To explain the principles and strategies for regional and rural planning.
2.	To identify appropriate planning and management strategies in the rural and regional planning context.
3	To recognize and make scientifically informed decisions about regional and rural planning issues.

Syllabus

Module 1: Introduction to Regional Planning
Basic Concepts of Regions, Defining a region: Region Types and Regionalization; Definition and delineation of region; need for regional planning; Typology of Regions: Resource Regions, Mega, Macro, Meso, and Micro Regions; Concept of Regional Planning: Nature, Objectives, Levels and Aims
Regional Development Strategies: Centralized and Decentralized; Regional Planning.

Module 2: Decentralized and District Planning in India
Decentralized Planning in India – Historical perspective: Current Scenario – Recent Development in decentralized district level planning. District Planning Process: Identification of Plan Objectives; Collection, Classification and Analysis of Data; Norms and Standards for District Planning; Components of District Planning in the Context of 73rd CAA, 1992, Planning Process under District Planning Committee, Resource mapping and determination of funding sources, consolidation of urban and rural plans; Plan Implementation: Five Year Plans and Rural Development; Planning Process, Policies and Programmes at National, State, Regional and District Levels; Planning, Development, Implementing and Monitoring, Organizations and Agencies: National and State .

Module 3: Fundamentals of Rural Planning

Concept of Rural regions; Concepts of Rural Area and Rural Development; Scope of Rural Development; Historical Evolution of Rural Development and Rural Settlement Pattern in Indian Context; Economic Issues of Rural Development – Differentiating Economic Growth and Economic Development; Rural Jobs and Income Sources; Rural Economic Policy

Village Planning within the wider context of regional development; Rural regional theories and studies; Regional planning process for general and for specific needs.

Case studies of development planning of villages and various types of rural regions of India.

Module 4: Rural Development

Introduction: Meaning and Scope and overview of rural development: Historical perspective – Rural Development Programmes in India. Problem / perception and identification;

Rural Area Planning – Programmes / Policies / Schemes for rural development, their coverage and outcomes; Rural Infrastructure Development: Bharat Nirman – A business plan for rural infrastructure, Rural Building Centres, PMGSY, IAY, Rajiv Gandhi Technology Mission, Central Rural Sanitation Programme, PURA. Rural Employment Schemes: Mahatma Gandhi National Rural Employment Guarantee Act, 2005, Sampoorna Grameen Yojana , National Food for work programme, Swarna Jayanty Gram Swarozgaryojana, National Social Assistance Programme. Programmes: Command Area Programme, Drought Prone Area Programme, Backward Area Development Programme, North Eastern Development Programme. Technology Missions: Water, Sanitation, etc. Institutional framework: Institutions for rural development, community development; DRDA; Local self-governments, district planning office; state planning boards; state rural development institutions; NIRD and SIRD. Case studies.

Module 5:Changing Profile of the Rural areas of India:

Consumption pattern changes, land utilization changes, cropping pattern changes, holding size change, living standard changes, changes in asset ownership – its implication in the planning process; Rural Settlement Analysis: Types, activity, environment and economic interface in rural habitat, technology in rural settlement; Land Utilization: Types of land utilization and its relevance to planning; Land conversions and its regulation / facilitation in peri-urban areas; Land utilization analysis; Common property and its use, tenancy and ownership, holding size and its relevance, irrigated and non-irrigated and land values; Sources of information for land information;

Text Books:

T1 - Misra, R.P., Regional Planning – Concepts, Techniques, Policies and Case Studies, NewDelhi
T2 - R.P Mishra, Regional Development Planning in India, Vikas, Delhi.
T3 - Qaiyum, A Regional Planning and Development, ITPI, New Delhi.
T4 - Rangasamy, S, Regional Planning and Development, Madurai.
T5 - Glasson, John, An Introduction to Regional Planning – Concept, Theory and Practice,: Susesex.
T6 - Kumar B Das.Rural Development through Decentralization,
T7 - Venkata K. Reddy,.Rural Development in India - Poverty and Development,
T8 - Katar Singh,Rural Development, Principles, Policies and Management, , Sage, New Delhi.

Reference Books:

R1 - Ramchandran R,Urbanisation and Urban Systems in India,. Oxford University Press
R2 - Sidddhartha K. and Mukherjee S., Cities Urbanisation and Urban Systems, KisalayaPublications

R3 - UDPFI Guidelines Volume 1, Ministry of Urban Affairs and Employment Govt. of India, New Delhi.
R4 - H.B Singh, Readings Material on Village Planning and Rural Development, ITPI, New Delhi
R5 - R.P. Mishra. District Planning: A Handbook, Concept Publishing House, New Delhi.
R6 - S. P. Singh,Planning and Management for Rural Development, Mittal Publisher,
R7 - R Patnayak ,Rural Development in India, Vikas Publishers.
R8 - R.K.,Arora, Indian Public Administration, WishwaPrakashan Ltd.,

Gaps in the syllabus (to meet Industry/Profession requirements) :nil

POs met through Gaps in the Syllabus :nil

Topics beyond syllabus/Advanced topics/Design :nil

POs met through Topics beyond syllabus/Advanced topics/Design : nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3X10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1	M	H	L	M	-	-

2	M	H	H	M	L	L
3	H	H	H	H	M	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2, CO3
CD2	Tutorials/Assignments	CO2, CO3,
CD3	Seminars	CO2, CO3,
CD4	Industrial/guest lectures	CO3,

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1.	L1, L2, L3			Basic Concepts of Regions, Defining a region: Region Types and Regionalization; Definition and delineation of region; need for regional planning;	T1, T2, T3, T5, R1,	CO1, CO2		PPT Digi Class/ Chalk -Board	
2.	L4, L5, L6			Typology of Regions: Resource Regions, Mega, Macro, Meso, and Micro Regions; Concept of Regional Planning: Nature, Objectives, Levels and Aims of Regional Development Strategies: Centralized and Decentralized; Regional Planning.	T1, T2, T3, T5, R1, R2	CO1, CO2		PPT Digi Class/ Chalk -Board	
3.	L7, L8, L9			Decentralized Planning in India – Historical perspective: Current Scenario – Recent Development in decentralized district level planning.	T6, R1, R4, R5	CO2, CO3		PPT Digi Class/ Chalk -Board	
4.	L10, L11, L12			District Planning Process; Resource mapping and determination of funding sources.	T6, R1, R4, R5	CO1, CO3		PPT Digi Class/ Chalk -Board	
5.	L13, L14,			Ist Quiz covering Module 1 and part of Module 2					
6.	L15			Concept of Rural regions; Concepts of Rural Area and Rural Development	T5, T6, T7, R4, R6, R7	CO2, CO3		PPT Digi Class/ Chalk -Board	

7.	L16, L17, L18			Historical Evolution of Rural Development and Rural Settlement Pattern in Indian Context;	T5, T6, T7, R6, R7	CO2, CO3		PPT Digi Class/ Chalk -Board	
8.	L19, L20, L21			Village Planning within the wider context of regional development; Rural regional theories and studies.	T5, T6, T7, R6, R7	CO2, CO3		PPT Digi Class/Chalk -Board	
9.	L22, L23, L24			Rural development: Rural Development Programmes in India.	T5, T6, T7, R6, R7	CO2, CO3		PPT Digi Class/ Chalk -Board	
10.	L25, L26,			Rural Area Planning; Rural Infrastructure Development: Bharat Nirman	T5, T6, T7, R6, R7	CO1, CO2		PPT Digi Class/Chalk -Board	
11.	L27			IInd Quiz covering part of Module 2 and Module 3					
12.	L28, L29, L30			Changing Profile of the Rural areas of India - , land utilization changes, cropping pattern changes, holding size change.	T5, T6, T7, R6, R7	CO3, CO4		PPT Digi Class/ Chalk -Board	
13.	L31, L32, L33			Rural Settlement Analysis: Types, activity, environment and economic interface in rural habitat, technology in rural settlement	T1, T5, T6, T7, R6, R7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
14.	L34, L35, L36			Types of land utilization and its relevance to planning; Land conversions and its regulation / facilitation in peri-urban areas.	T1, T5, T6, T7, T8, R7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
15.	L37, L20, L21			Land utilization analysis; Common property and its use, tenancy and ownership, holding size and its relevance, irrigated and non-irrigated and land values; Sources of information for land information;	T1, T5, T6, T7, T8, R7, R8	CO2, CO3		PPT Digi Class/ Chalk -Board	
16.	L38			Sources of information for land information;	T1, T5, T6, T7, T8, R7, R8	CO2		PPT Digi Class/ Chalk -Board	
17.	L39, L40			IIIrd Quiz covering Module 4					

COURSE INFORMATION SHEET

Course code : AR 661
Course title : Planning Studio / Workshop II (With Field study)
Pre-requisite(s) : Candidate should have registered Planning Studio / Workshop I
Co- requisite(s) : None
Credits : 06 L: 0 T: 0 P: 12
Class schedule per week : 12
Class : M.U.P.
Semester / Level : II
Branch : Architecture
Name of Teacher : Dr. Satyaki Sarkar

Course Objectives

This course enables the students:

A.	To introduce students to concepts of urban planning, land-use interaction studies, policies and strategies that seek to manifest itself through urban development plan;
B.	To guide students to identification of needs of a community through socio-economic and physical survey, as well as secondary information collection;
C.	To provide students with opportunities to make decision and propose projects that will result in the improvement of socio-economic welfare of the urban area and its future.

Course Outcomes

After the completion of this course, students will be able to:

1.	Explain the parameters that govern the development of urban areas;
2.	Recognize urban problems and factors responsible;
3.	Identify available resources that are relevant to urban development;
4.	Develop landuse strategies and concepts for urban development
5	Carry out efficient management and decision making in urban development planning.

Syllabus

1. Integrated plan for urban region, including 2 weeks field survey.
2. Theories and principles of urban development plan and preparation for survey and data collection.
3. Field survey of the study area.
4. Analysis of data and information
5. Planning for urban area and its region (structure plan / Development plan) with emphasis on:
    - Land use and transportation network
    - Infrastructure plan
    - Action area programs and urban renewal plan
    - Capital budget and financing
    - Administrative and management backup for implementation

Text books:

T1 - Kevin Lynch, Good City Form, MIT Press

T2- , Design of Cities, Penguin publishers

Reference books:

R1 - URDPFI Guidelines, Government of India, Ministry of Housing and Urban Affairs

R2 - Various City Development Plans under JNNURM

R3 - Gallent Robinson, Neighbourhood Planning: Communities, Networks and Governance, Policy Press

R4 - Praja.org. Handbook of Urban laws and Policies that Impact Housing,
R5 - Housing, Water Supply and Sanitation - of Planning Commission

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design : Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Seminars
CD2	Mini projects/Projects
CD3	Laboratory experiments/teaching aids
CD4	Industrial/guest lectures
CD5	Self- learning such as use of NPTEL materials and internets

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**	**Individual components of tool**	**% Contribution during CO Assessment**
Progressive Evaluation	60	Day to Day performance	30
		Quiz	10
		Viva	20
End Sem Evaluation	40	Examination performance	30
		Quiz	10

Assessment Components	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Progressive Evaluation	√	√	√	√	√
End Sem Evaluation	√	√	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**

	PO1	PO2	PO3	PO4	PO5	PO6
1			H		M	
2	M	H				
3	M				H	
4	H	H	H	H	M	L
5	H	H	M	M	L	M

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Seminars	CO1
CD2	Mini projects/Projects	CO2, CO3, CO4,CO5
CD3	Laboratory experiments/teaching aids	CO2, CO3, CO4,CO5
CD4	Industrial/guest lectures	CO3, CO4, CO5
CD5	Self- learning such as use of NPTEL materials and internets	CO1, CO2

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1-2	1-12			Field trip for 2 weeks	T-2, R-1	CO1, CO2	Data collection	Computerised formats	
3 -4	13 - 24			Collation of data collection	T-2, R-1	CO1, CO2, CO3	In graphical format	Computerised formats	
5	25			Internal evaluation of progress					
5-9	26-54			Data collection and analysis	T-2, R-1	CO1, CO2, CO3	Details of data collection and analysis to be prepared by students	Computerised formats	
9	55			Internal evaluation of progress					
10-13	56-78			Final analysis and report writing	T-1,2, R-1,2	CO4, CO5,	Detailed report prepared at the end	Computerised formats and hard copy report	
14				Internal evaluation of progress					

SEMESTER III

COURSE INFORMATION SHEET

Course code : MT 601
Course title **:** Research Methodology
Pre-requisite(s) **:** None
Co- requisite(s) **:** None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class **:** MUP
Semester / Level : III
Branch **:** MBA
Name of Teacher **:** Dr. Supriyo Roy

Course Objectives

This course enables the students:

A.	Develop an understanding of Role of Descriptive, Applied and Causal Research; Qualitative and Quantitative Research; Process of Research and Types of research with application to areas concern.
B.	Explain the mechanism for defining the Research Problem, Research Objectives and Hypothesis framing.
C.	Develop an understanding of merits and limitations of various research designs, types of data and methods of data collection.
D.	Explain the mechanism for applying salient Univariate, Bivariate and Multivariate statistical tools of data analysis.
E	Discuss advanced methods of Data analyses, Statistical Data Processing Software's and their application to Engineering and Management Science.
F	Explain the characteristics of a good Business Research Report.

Course Outcomes

After the completion of this course, students will be:

1.	Describe the research process and list the characteristics of various types of Descriptive, Applied and Causal research.
2.	Decision Making Problem; Identification to any Decision making management problem, determination of the related Research Problem.
3.	Nature of Research: Qualitative Research and Quantitative Research with implicational areas.
4	Formulate Research Objectives and Research Hypothesis from a given research problem.
5	Given the Problem select suitable Research Design for achieving the research objectives with Proper Sampling Frame.
6	Organize the data Scaling and collection process, Reliability, Validity Checking; Proper Statistical tools to select and apply.
7	Analyse data by using suitable statistical techniques with Statistical software's to draw inferences and recommend solutions to the research problem.

Syllabus

Module 1

Basics of Research: Meaning of Research, Significance of research, Objectives and Motivation in research, Scientific research, Types and Methods of research: Applied and Fundamental research, Quantitative and Qualitative research. Date Collection and Analysis: Primary and Secondary data,

Attitude measurement and Scaling Techniques, Literature Review and Problem formulation.

Module 2
Research Design: Feature of a good Research Design, Types of Research Design: Exploratory and Descriptive Research Design- Concept, Types, Usage, Experimental Design- Causal relationships, Concept of independent and Dependent variables, Concomitant variable, Extraneous variable, Treatment, Control group.

Module 3
Statistical Inferences: Estimation Theory: Unbiasedness, Minimum Variance Unbiased Estimator, Testing of Hypothesis: Procedures of Hypothesis Testing, Errors in Testing, Testing Hypothesis about Population Mean and Population Proportion, Difference between two Means and Two Proportions, Chi-square test, Students t-test. Sampling Distribution, Probabilistic and Non Probabilistic Distribution.

Module 4
Multivariate Data Analysis: Introduction to ANOVA, One way and Two way ANOVA, Discriminant Analysis, Factor Analysis, Conjoint Analysis and Clustering Methods, Significance of these tools in Engineering and Managerial Decision Making Problems.

Module 5
Advance Qualitative Research: Multivariate Normal, Structural Equation Modeling, Introduction to Data Processing, SPSS, R, Python.
Report Writing, Research Ethics, IPR, lmpact Factor, Plagiarism.

TEXT BOOKS:

T1. Business Research Methods, Cooper & Schindler, Tata McGraw Hill.
T2. Research Methods for Business Students, Saunders, Pearson Education

Reference Books

R1. Research Methods for Business, Uma Sekaran, Wiley Publications
R2. Business Research Methods, Bryman, Alan& Emma Bell, Oxford University Press.
R3. Social research methods, Walliman, Nicholas Sage Publications.
R4. Statistical Methods in Business & Social Sciences, Shenray& Pant., Macmillan
R5. Research Methods in Behavioural Sciences, Dwivedi R.S, Macmillan.

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

Course Delivery methods
Lecture by use of boards/LCD projectors/OHP projectors
Tutorials/Assignments
Seminars
Mini projects/Projects

Laboratory experiments/teaching aids
Industrial/guest lectures
Industrial visits/in-plant training
Self- learning such as use of NPTEL materials and internets
Simulation

Programme Outcome (PO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	% Contribution during CO Assessment
End Sem Examination Marks	50
Quiz (3X10)	30
Seminar	10
Assignment	10

Assessment Components	CO1	CO2	CO3	CO4	CO5	CO6
End Sem Examination Marks	√	√	√	√	√	√
Quiz (3X10)	√	√	√	√	√	√
Seminar	√	√	√	√	√	√
Assignment	√	√	√	√	√	√

Indirect Assessment

1. Student Feedback on Faculty
2. Student Feedback on Programme Outcome

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
1	M	H	H	M	M	M	H	H
2	H	M	M	M	-	M	-	H
3	H	L	M	M	M	M	-	M
4	H	M	M	H	M	M	M	H
5	H	M	M	M	H	H	H	M
6	H	M	M	M	M	M	-	M
7	H	M	M	H	M	M	M	H

Mapping Between COs and Course Delivery (CD) methods			
CD	**Course Delivery methods**	**Course Outcome**	**Course Delivery Method**
CD1	Lecture by use of boards / LCD projectors / OHP projectors	CO1	CD1
CD2	Tutorials / Assignments	CO2	CD1.CD2,CD3&CD5
CD3	Seminars	CO3	CD1,CD2,CD4 & CD8

CD4	Mini projects / Projects	CO4	CD1,CD2,CD5& CD9
CD5	Laboratory experiments / teaching aids	CO5	CD1,CD2,CD3& CD8
CD6	Industrial / Guest lectures	CO6	CD1,CD2,CD4,CD5& CD8
CD7	Industrial visits/in-plant training		
CD8	Self- learning such as use of NPTEL materials and internets		
CD9	Simulation		

Mapping between Programme Objectives and Programme Outcomes

Programme EDUCATIONAL Objectives	**Programme Outcomes**							
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
1	M	-	H	L	H	H	M	H
2	H	H	L	M	L	M	M	M
3	M	-	H	-	M			
4	M	M	L	H	H	H	L	M
5	H	H	L	M	L	M	M	H

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tenta-tive Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Method-ology used	Remarks by faculty if any
1	L1,L2			Basics of Research: Meaning of Research, Significance of Research	T1	CO1, CO2		Chock -Board	
1	,L3,L4			Objectives and Motivation in research, Scientific research, Types and Methods of research	T1, T2, R1	CO1,		Chock -Board	
2	L5, L6			Applied and Fundamental research, Quantitative and Qualitative research, Data Collection and Analysis	T1, T2 R1 R3	CO1		PPT Digi Class/Chock -Board	
2	L7,L8,			Primary and Secondary data, Attitude measurement and Scaling Techniques	T1, T2 R3,	CO1, CO2		PPT Digi Class	
3	L9,L10			Literature Review and Problem formulation.	T1, T2, R4	CO1, CO2		PPT Digi Class	
3	L11, L12			Research Design: Features of a good	T1, T2,	CO1, CO2		PPT Digi	

				Research Design	R2			Class	
4	L13,L 14,			Types of Research Design, Exploratory And Descriptive Research Design- Concept, Types, Usage	T1, R2, R5	CO1, CO2		PPT Digi Class	
4	L15, L16			Experimental Design- Causal relationships	T1, T2, R5	CO1, CO2, CO4		PPT Digi Class	
5	L17 L18			Concept of independent and Dependent variables	R4, R5,	CO1, CO2		Chock -Board	
5	L19, L20			Concomitant variable, Extraneous variable, Treatment, Control group	T1, T2, R5	CO1, CO2, CO5		PPT Digi Class	
6	L21, L22			Statistical Inferences: Estimation Theory: Unbiasedness, Minimum Variance Unbiased Estimator	T1, T2, R3 R5	CO2 , CO3 CO5		PPT Digi Class/ Chock -Board	
6	L23, L24			Testing of Hypothesis: Procedures of Hypothesis Testing, Errors in Testing	T1, T2, R1 R3	CO2, CO3 CO5		PPT Digi Class	
7	L25 L26			Testing Hypothesis about Population Mean and Population Proportion, difference between two Means and Two Proportions	T1, T2, R3 R5	CO2, CO3, CO4		PPT Digi Class/ Chock -Board	
7	L27, L28			Chi-square test, Students t-test	T1, T2, R5	CO3, CO4		PPT Digi Class/ Chock -Board	
8	L29,L 30			Sampling Distribution, Probabilistic and Non-Probabilistic Distribution.	T1, T2, R6	CO3, CO4		PPT Digi Class	
8	L31.L 32			Multivariate Data Analysis: Introduction to ANOVA	T1, T2	CO3, CO4		PPT Digi Class/ Chock -Board	
9	L33,L 34			One way and Two way ANOVA	T1, T2,	CO3, CO4 CO6		Chock -Board	
9	L35, L36			Discriminant Analysis, Factor Analysis	T1, T5, R3 R4	CO4, CO5 CO6		PPT Digi Class	

10	L37, L38			Conjoint Analysis and Clustering Methods	T1, T2, R4	CO4, CO5		PPT Digi Class	
10	L39 L40			Significance of these tools in Engineering and Managerial Decision Making Problems	T1, T3, R5	CO4, CO5 CO6		PPT Digi Class/ Chock -Board	
11	L41 L42			Advance Qualitative Research: Multivariate Normal	T1, T2, R5	CO4, CO5		PPT Digi Class/ Chock -Board	
11	L43 L44			Structural Equation Modeling	R1, R6	CO3, CO5 CO6		PPT Digi Class/ Chock -Board	
12	L45, L46			Introduction to Data Processing, SPSS, R, Python,.	R3, R5	CO4, CO5		PPT Digi Class/ Chock -Board	
12	L47, L48			Report Writing, Research Ethics, IPR, lmpactFactor, Plagiarism	R3 R4 R5	CO4, CO5 CO6		PPT Digi Class/ Chock -Board	

COURSE INFORMATION SHEET

Course code : AR 701
Course title : Urban Regeneration & Conservation Techniques
Pre-requisite(s) : None
Co- requisite(s) : None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class : M.U.P.
Semester / Level : III
Branch : Architecture
Name of Teacher : Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A.	To explore the history, philosophy and science of historic area conservation
B.	To encourage appropriate methodologies and tools for recording, documentation, inventories and information management of historic structures and areas;
C.	To develop professional level skills on conservation using various techniques.

Course Outcomes
After the completion of this course, students will be able to:

1.	To understand the development of the philosophy and ethics of conservation and the legislation that protects the historic environment.
2.	To survey, record and analyze the development of historic buildings through the examination of their materials, construction and style.
3.	To learn practical techniques for conservation of built form and historic area.

Syllabus
Module 1
Quality of historic cities and areas: problems and issues, cultural resource management.

Module 2
Integrated urban conservation: principles, international charters, guidelines and standards for conservation of historic monuments, sites and heritage zones; aesthetic and social dimensions, economic, legal and tourism aspects.

Module 3
Planning procedures: inspection, surveys, investigation techniques, methods for inventories and documentation, identification and reporting on heritage zones; programs for adaptive reuse, restoration, rehabilitation and infill or new constructions.

Module 4
Concept of urban redevelopment, Urban Renewal. Urban reconstruction, urban rejuvenation. Economic, social and physical environmental aspects. Perception of urban regeneration in the context of evolution of selected urban centres of the West and the East. Process to evolve a feasible set of goals and objectives for urban regeneration.

Module 5
Implementation of plans and urban management: phasing, resource mobilization, incentives, acts and legal tools; people's awareness and participation, role of various action groups.

Text books:

T1 - Alan Dobby, Conservation and planning, The Built Environment Series, Hutchinson of London,

T2 - Bernard M. Feilden; Guidelines for conservation; Architectural Press, London.

T3- Robert Pickard; Policy involved in Heritage Conservation;

T4 - Nahoum Cohen, Urban Conservation, MIT Press,

T5 - Peter Roberts, Peter W. Roberts, Hugh Sykes, Urban Regeneration: A Handbook, SAGE Publication

T6 - Jerome Rothenberg, Economic evaluation of urban renewal: conceptual foundation of benefit-cost analysis, Brookings Institution

Reference books:

R1 - Nahoum Cohen, Urban Planning, Conservation, and Preservation, Volume 1 McGraw Hill Professional

R2 - Xavier Greffe; Managing our Cultural Property; Aryan Book International, New Delhi.

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 Quizzes (3x10)	30
Seminar	10
Assignment	10

Assessment Components	**CO1**	**CO2**	**CO3**
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1		H				
2	H	H	M	H	L	M
3		H	M			M

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2
CD2	Tutorials/Assignments	CO2, CO3
CD3	Seminars	CO2, CO3
CD4	Industrial/guest lectures	CO3

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1	1-3			Introduction	T-1,2, R-1	CO1	Quality of Historic cities with example	Chalk-board, PPT	
2-3	4-9			Introduction	T-1,2, R-1	CO1	Problems, issues, cultural resource management	Chalk-board, PPT	
3-4	10-12			Integrated urban conservation	T-2,4 R-1	CO1	Principles, charters, guidelines and standards	Chalk-board, PPT	
5	13-15			Integrated urban conservation	T-2, 4 R-1	CO1	Heritage zone, economic, legal and tourism	Chalk-board, PPT	
6	16			QUIZ 1					
6 -7	17-21			Planning procedure	T-3 R-2	CO2	Surveys, investigation, inventories	Chalk-board, PPT	

7-8	22-25			Planning procedure	T-3 R-2	CO2	Restoration, rehabilitation, infill, adaptive reuse	Chalk-board, PPT	
9-10	26-29			Urban redevelopment	T-2, R-4	CO2	Renewal, reconstruction, rejuvenation,	Chalk-board, PPT	
10	30			QUIZ 2					
11	31-33			Urban redevelopment	T-5,6	CO2, CO3	Urban regeneration examples	Chalk-board, PPT	
12-13	34-38			Urban management	T-5,6	CO2, CO3	Economic and legal tools, action groups	Chalk-board, PPT	
13	39			QUIZ 2					
13	40			Assignments & Guest lecture		CO1			

COURSE INFORMATION SHEET

Course code : AR 703
Course title : Sustainable City Planning
Pre-requisite(s) : None
Co- requisite(s) : None
Credits : 03 L: 3 T: 0 P: 0
Class schedule per week : 03
Class : MUP
Semester / Level : III
Branch : Architecture
Name of Teacher : Dr. Janmejoy Gupta

Course Objectives

This course enables the students:

A.	Understand what all constitutes "urban sustainability" and the potential ways to measure it, alongside understanding the complexities involved in measuring it.
B.	Understand historical timeline of development of sustainable urban planning concepts, beginning from ancient times to the twentieth century.
C.	Be aware of best practices in urban-planning related to urban sustainability and appropriate spatial measures for sustainable city planning.
D.	Understand infrastructural systems to ensure healthy water supply, sanitation, and waste disposal
E.	To review urban-planning policies and methods to promote city sustainability and reduced GHG emissions from buildings and transportation.

Course Outcomes

After the completion of this course, students will be able:

1.	To analyse sustainability metrics and indicators for urban centres in India.
2.	To connect urban sustainability concepts and technology to actual urban planning challenges faced.

Syllabus

Module 1: Introduction to Sustainable Built Environment: Principles of Sustainability, Sustainable Urbanization of natural and built environment, Sustainable City Planning: Checklist and Priorities, Social, Cultural and Economic aspects of Urban Sustainability.

Module 2: Sustainable Architecture - Historical Perspective: India & Global Scenario: Sustainable Planning Principles used in Ancient Indian Cities, Sustainable Human Settlement Planning and housing, Global Utopian Visions – Garden Cities, Neighbourhood Concept, etc-Contributions of Ebenezer Howard, Clarence Perry, Clarence Stein, etc.

Module 3: Concept of Sustainable Urban development: Slums- Causes and effect, Urban Development Plan**,** Community Participation in Developing Sustainable Design, Clean City Initiatives: Swach Bharat Initiative.

Module 4: Sustainable Infrastructure for cities: Resource use in urban areas: Water, waste, energy conservation, Appropriate infrastructural systems to ensure healthy water supply, sanitation, and waste disposal, The probability of acute drinking water crisis soon – infrastructure related issues.

Module 5: Urban Sustainability Appraisal in cities: Appropriate Sustainability Indicators for Urban India, Urban Planning Policy Interventions to enhance urban-sustainability, developing appropriate Sustainability-Matrix for Cities, how to make Indian Cities Smart and Sustainable.

Reference books:

R1 - Corburn,J. 2009. Towards the Healthy City: People, Places, and the Politics of Urban Planning.
R2 - Moore,S. A. 2007. Alternative Routes to the Sustainable City: Austin, Curitiba, and Frankfurt. Lanham, MD: Lexington Books.
R3 - Wheeler, S.M., and T. Beatley eds. 2008. Sustainable Urban Development reader, 2nd ed. Ew York: Routledge.
R4 - Bell, S., and S.Morse.199. Sustainability Indicators; Measuriing the immeasurable. London: Earthscan. (pp.9-32)
R5 - Campbell Scot, "Green Cities, Growing Cities and Just Cities: Urban Planning and the Contradictions of Sustainable Development", Journal of American Planning Association 62:3, 296-312, 1996.
R6 - Bajpai, Jitendra N., "Building a foundation for smart Indian cities," published in "Insight", a Journal of Indian School of Business, Hyderabad, April 2015.
R7 - The Life and Death of American Cites, Jane Jacobs.
R8 - Gideon and Golany, New-Town Planning: Principles and Practice, Wiley-Interscience Publication, John Wiley & Sons, New York.
R9 - Jenks Mike, Joan Colin, "Dimensions of the Sustainable City", Springerlink, 2010 (available as an e-book at the Columbia University Library).
R10 - World Bank, 'China Low Carbon Cities Book, Chapter 1:3: Low Carbon Cities in China: Characteristics, Roadmap and Indicators., September 2011.

Gaps in the syllabus (to meet Industry/Profession requirements): Nil

POs met through Gaps in the Syllabus:NA

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design: Nil

	Course Delivery methods
CD1	Lecture by use of boards/LCD projectors/OHP projectors
CD2	Tutorials/Assignments
CD3	Seminars
CD4	Industrial/guest lectures

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
End Sem Examination Marks	50
3 quizzes (3x10)	30
Seminar	10
Assignment	10

Assessment Components	CO1	CO2	CO3
End Sem Examination Marks	√	√	√
Quiz (3 nos 10 marks each)	√	√	√
Seminar	√	√	√
Assignment	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes.

Course Outcome #	Program Outcomes					
	PO1	PO2	PO3	PO4	PO5	PO6
1	H	H	M	L	H	M
2	H	H	H	L	H	M

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Lecture by use of boards/LCD projectors/OHP projectors	CO1, CO2
CD2	Tutorials/Assignments	CO1, CO2
CD3	Seminars	CO1, CO2
CD4	Industrial/guest lectures	CO2

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by Faculty if any
1	L1, L2			Principles of Sustainability. Sustainable Urbanization of natural and built environment.	T1,T2.	CO1		PPT Digi Class	
1	L3, L4			Sustainable City Planning: Checklist and Priorities. Social, Cultural and Economic aspects of Urban	T1,T2, T3.	CO1		PPT Digi Class	

				Sustainability.					
2	L5, L6			Sustainable Planning Principles used in Ancient Indian Cities.	T8	CO2		PPT Digi Class/Chalk -Board	
2	L7, L8, L9			Sustainable Human Settlement Planning and housing.	T5, T7, T8.	CO1, CO 2.		PPT Digi Class/Chalk -Board	
3	L10, L11.			Global Utopian Visions – Garden Cities, Neighbourhood Concept, etc- Contributions of Ebenezer Howard, Clarence Perry, Clarence Stein, etc.	T7,T8, T9.	CO2		PPT Digi Class/Chalk -Board.	
4	L12, L13.			Slums- Causes and effect. Urban Development Plan.	T5, T6, T7,T8,	CO1, CO2		PPT Digi Class	
4	L14, L15.			Community Participation in Developing Sustainable Design.	T6, T9, T10.	CO1, CO2		PPT Digi Class	
4				Clean City Initiatives- Swach Bharat Initiative.	T6, T9.	CO2		PPT Digi Class/Chalk -Board	
5	L16, L17.			Resource use in urban areas: Water, waste, energy conservation.	T1, T4, T5, T9	CO2		PPT Digi Class/Chalk -Board	
6	L18, L19, L20.			Appropriate infrastructural systems to ensure healthy water supply, sanitation, and waste disposal.	T1, T4, T5, T9	CO2		Chalk -Board	
7	L21, L22, L23.			The probability of acute drinking water crisis in the near future –	T1, T4, T5, T9	CO2		Chalk -Board	

				infrastructure related issues.					
8	L24, L25, L26			Appropriate Sustainability Indicators for Urban India.	T4	CO1		Chalk -Board	
9	L27, L28			Urban Planning Policy Interventions to enhance urban-sustainability.	T1,T2, T3,T5	CO1, CO2		Chalk -Board	
10	L29, L30,			Developing appropriate Sustainability-Matrix for Cities.	T2,T3, T4.	CO1, CO2		PPT Digi Class/Chalk -Board	
11	L31, L32.			How to make Indian Cities Smart and Sustainable.	T6, T8,T9, T10.	CO1, CO2		PPT Digi Class/Chalk -Board	

COURSE INFORMATION SHEET

Course code **:** AR 711
Course title **:** Dissertation & Planning Seminar
Pre-requisite(s) **:** Should have cleared all Planning Sessionals in Semester 1
Co- requisite(s) **:** None
Credits : 08 L: 0 T: 0 P: 16
Class schedule per week **:** 16
Class **:** M.U.P.
Semester / Level **:** III
Branch **:** Architecture
Name of Teacher **:** Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A	To provide an opportunity to each student to undertake in-depth and original study and research in the field
B.	To explore various literature on the aspect of research
C.	To encourage finding of appropriate methodologies and tools for analysing the areas;
D.	To develop professional level skills on interactive presentation

Course Outcomes
After the completion of this course, students will be able:

1.	To understand the development of a research, and finding and collating relevant literature studies
2.	To identify appropriate techniques for data collection and analysis concerned with the field of research
3	To synthesize the knowledge and skills, acquired through the learning of various theories and practices
4.	To deliver presentations on aspects of research

Syllabus
1. Each student is required to prepare a thesis on a subject concerning urban planning and development, (presented through a seminar) and under the guidance of an advisor, approved by the department.

2. The topic of research should be an original study in the field of his / her interest.

3. The subject of the thesis may be conceptual, historical analytical, comparative or in any other area related to urban planning and development, which will be approved by the departmental jury, in stages.

4. Development of the thesis is to be done at this stage through delineation of project area, case studies, literature studies, survey and data collection only.

5. Seminar is to be presented regarding tool and techniques to be applied in the dissertation project.

Text books: NA

Reference books: NA

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil
POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Seminars
CD2	Mini projects/Projects
CD3	Laboratory experiments/teaching aids
CD4	Industrial/guest lectures
CD5	Self- learning such as use of NPTEL materials and internets

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
Progressive Evaluation	60
End Sem Evaluation	40

Assessment Components	**CO1**	**CO2**	**CO3**	**CO4**
Progressive Evaluation	√	√	√	√
End Sem Evaluation	√	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1		H		H	L	
2	M	M	H	H		M
3	H	M	H		M	
4		H			H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Seminars	CO1, CO2, CO3, CO4,
CD2	Mini projects/Projects	CO2, CO3, CO4,
CD3	Laboratory experiments/teaching aids	CO2, CO3, CO4,
CD4	Industrial/guest lectures	CO3, CO4,
CD5	Self- learning such as use of NPTEL materials and internets	CO1, CO2

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1-2	1-23			Finalisation of the field of work		CO1	Finalisation of the topic, aims, objectives, scope and methodology	Computerised tool	
2	24			Internal evaluation					
3-6	25-71			Literature review and case studies		CO1, CO2	Detailed literature studies on various aspects related to research	Computerised tool	
6	72			Internal evaluation					
7-10	73-120			Tools and Techniques		CO1, CO2	Identification of tools and techniques in related domain	Computerised tool	
10	121			Internal evaluation					
11-12	122-144			Finalisation of all literature review		CO2,CO3	Finalisation of technique	Computerised drawing tool	
12	145			Internal evaluation					
13-14	146-168			Preparation of project report and presentation		CO4	Detailed report preparation	Computerised tool	

COURSE INFORMATION SHEET

Course code : AR 712
Course title : Training Viva
Pre-requisite(s) : None
Co- requisite(s) : None
Credits : 02 L: 0 T: 0 P: 4
Class schedule per week : 04
Class : M.U.P.
Semester / Level : III
Branch : Architecture
Name of Teacher : Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A	To provide an opportunity to each student to undertake in-depth training and research in the field
B.	To explore various planning job related opportunities
C.	To develop professional level skills

Course Outcomes
After the completion of this course, students will be able to:

1.	To understand the type of work executed in industry in related discipline
2.	To contribute to various work profiles as per industry demand
3.	To deliver presentations on aspects of work

Syllabus

1. Each Student has to undertake 6 weeks of exhaustive training at any Planning Organisation dealing with jobs related to Urban & regional planning, Transportation Planning, Housing & related infrastructure, Economic Planning, Infrastructure planning and the likes
2. Each student is required to prepare a report in line with their field of training along with work schedule at the end of the training programme.
3. Each student is required to give a presentation of the work done in training.

Text books: NA

Reference books: NA

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: NIL

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Seminars
CD2	Mini projects/Projects

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	% Contribution during CO Assessment
End Sem Evaluation	100

Assessment Components	CO1	CO2	CO3
End Sem Evaluation	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	Program Outcomes					
	PO1	PO2	PO3	PO4	PO5	PO6
1		H		H	L	
2	M	M	H	H		M
3	H	M	H		M	
4		H			H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Seminars	CO1, CO2, CO3,
CD2	Mini projects/Projects	CO2, CO3,

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1-2	1-6			Collation of data collected		CO1		Computerised tool	
3-6	7-18			Collation of data collected		CO1, CO2		Computerised tool	
7	19-21			Internal evaluation					
8-13	22 - 40			Preparation of synopsis		CO1, CO2		Computerised tool	

				and project report					
14	40-41			Internal evaluation		CO3			

SEMESTER IV

COURSE INFORMATION SHEET

Course code : AR 751
Course title : Thesis / dissertation
Pre-requisite(s) : Should have cleared all Planning Sessionals in Semester 2 and should have registered for Dissertation & Planning Seminar in 3rd semester
Co- requisite(s) : None
Credits : 16 L: 0 T: 0 P: 32
Class schedule per week : 32
Class : M.U.P.
Semester / Level : IV
Branch : Architecture
Name of Teacher : Dr. Satyaki Sarkar

Course Objectives
This course enables the students:

A	To expose the students to a guided research on topic initiated in 3rd semester
B.	To introduce students to data collection on their field of research
C.	To encourage finding of appropriate result through use of relevant tools and techniques for analysis of data deduced in 3rd semester
D.	To propose appropriate strategies / policies / guidelines for development of their research areas.

Course Outcomes
After the completion of this course, students will be able to:

1.	To understand the process of data collection
2.	To apply relevant techniques for relevant research
3	To synthesize the knowledge and skills, acquired through the learning of various theories and practices to provide proposals for future.

Syllabus
In continuation to the previous semester thesis, the student is required to collect data, analyse the collected data and formulate strategies, policies, and principles for the development of the analysed scenario. The student is also required to prove the validity of the proposal on any chosen action area within the study zone. Each student is required to defend his / her thesis through a presentation to external panel of experts.

Text books: NA

Reference books:

R1 - Turabian, Kate L. A Manual for Writers of Research Papers, Theses, and Dissertations: Chicago Style for Students and Researchers

Gaps in the syllabus (to meet Industry/Profession requirements) : Nil

POs met through Gaps in the Syllabus : Nil

Topics beyond syllabus/Advanced topics/Design: Nil

POs met through Topics beyond syllabus/Advanced topics/Design : Nil

	Course Delivery methods
CD1	Seminars
CD2	Mini projects/Projects
CD3	Laboratory experiments/teaching aids

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment

Assessment Tool	**% Contribution during CO Assessment**
Progressive Evaluation	60
End Evaluation	40

Assessment Components	**CO1**	**CO2**	**CO3**
Progressive Evaluation	√	√	√
End Evaluation	√	√	√

Indirect Assessment –

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping between Objectives and Outcomes

Mapping of Course Outcomes onto Program Outcomes

Course Outcome #	**Program Outcomes**					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
1		H	H	H	L	
2	H	M	L		L	M
3	H	H	H	H	H	H

Mapping Between COs and Course Delivery (CD) methods		
CD	**Course Delivery methods**	**Course Outcome**
CD1	Seminars	CO1, CO2, CO3,
CD2	Mini projects/Projects	CO2, CO3,
CD3	Laboratory experiments/teaching aids	CO2, CO3,

Lecture wise Lesson planning Details.

Week No.	Lect. No.	Tentative Date	Ch. No.	Topics to be covered	Text Book / References	COs mapped	Actual Content covered	Methodology used	Remarks by faculty if any
1-2	1-36			Collation of data collected		CO1		Computerised tool	
2	48			Internal evaluation					
3-6	49-143			Analysis of data collected		CO1, CO2		Computerised tool	
6	144			Internal evaluation					
7-10	145-239			Final analysis of data collected		CO1, CO2		Computerised tool	
10	240			Internal evaluation					
11-12	241-287			Finalisation of proposal		CO2,CO3		Computerised tool	
12	288			Internal evaluation					
13-14	289-336			Preparation of synopsis and project report	R-1	CO3	Detailed report preparation	Computerised tool	