

Semester- I

HABITAT DESIGN STUDIO-I (COMMUNITY LEVEL STUDY OF EXISTING HABITATS)			
Course Code	24HDC11	CIE Marks	50
Teaching Hours/Week (L:P: SDA)	1:5:1	SEE Marks	50
Total Hours of Pedagogy	6	Total Marks	100
Credits	6	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> The Habitat Design Studio aims at studying and understanding the fabric of an existing habitat and realize the determinants and causative forces responsible for urban growth and change. 			
Studio Outline			
To comprehend the dynamics of an existing habitat at community level.			
1. Study and documentation of identified study area.			
<ul style="list-style-type: none"> Geographic parameters- site environment, topography, climate, natural and manmade features. Social environment- Society, Community, Groups. Social Structure & Institutions- continuity and change. Demographic analysis, Economic profile of the population. Spatial Morphology- Land use, Transport networks, Building typology. Physical & Social Infrastructure. Institutional Framework. 			
2. Data Analysis and Inferences.			
<ul style="list-style-type: none"> The syntax of space. Traffic management and Mobility plans. Tangible, Intangible aspects of the habitat. Aspects of Temporality and Informality. Aspects of Human networks, Associational Values, Social segregation, Overcrowding, Contested Spaces, Crime and Gender issues. Imageability-through the perspective of various urban theorists. 			
3. Interventions			
<ul style="list-style-type: none"> Strategies to be proposed for the study area in response to the inferences drawn. Any one of the suggested strategies to be demonstrated through design. Any other salient features relevant to the identified study area to be considered. 			
Integrated Studio Course (ISC)			
1. Social Theories of Urban Space- Understanding and Studying Urban habitats; and Various techniques.			
2. Using crowd Sourced data and GIS to generate relevant maps for the studio.			
Assessment Details (both CIE and SEE)			
For Professional Studio Core Course Integrated with the theories/software relating to the studio. The theory part of the ISC shall be evaluated by CIE with regular assignment. The studio part shall be evaluated by both CIE & SEE (Viva-Voce with the external examiner).			
The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.			
Continuous Internal Evaluation:			
Continuous Internal Evaluation will be based on			
<ol style="list-style-type: none"> Seminars, Assignments, and Studio Discussions for ISC component. Two Internal Reviews, two External Reviews and Final Portfolio Submission for Studio component. 			
Semester End Examination:			
Viva-voce: The viva voce shall be conducted in two phases, firstly for the group work followed by Viva Voce for individual interventions, considering the weightage ratio of 70:30.			

Suggested Learning Resources:**Books**

1. Cliff Moughtin, "Urban Design: Street and Square", Architectural Press, 2003.
2. Gehl, J, "Life Between Buildings: Using Public Space", Washington, D.C. Island Press, 2011.
3. Michael Larice (Editor), Elizabeth Macdonald (Editor), "The Urban Design Reader" Routledge, 2013.

Web links and Video Lectures (e-Resources):

1. https://link.springer.com/chapter/10.1007/978-3-030-59140-3_7
2. <https://library.oapen.org/handle/20.500.12657/50404>

Skill Development Activities Suggested:

1. Skills to identify parameters and reading the Habitat.
2. Preparing Questionnaire formats for Survey.
3. Representation of data related to Habitat through thematic Maps.
4. Analytical abilities to evaluate issues related to Habitat.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Identify components of human habitat	IV
CO2	Generate systematic method of data collection and documentation of habitat	V
CO3	Analyse issues related to human habitat	VI
CO4	Generate strategies for identified Habitat related issues	VI
CO5	Develop design interventions for existing fabric	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Ability to read the habitat	1, 9
2	Ability to identify the components of the human habitat	2, 3
3	Documentation of human habitats	2, 3, 7, 9
4	Generate strategies and design solutions	4, 5, 6

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	3	2	-	-	1	1	3	1
CO2	3	3	2	2	-	-	-	-	3	2
CO3	2	3	3	1	-	1	2	2	3	2
CO4	2	2	3	2	3	2	2	2	-	1
CO5	1	2	2	2	3	2	2	2	-	2
Average	2	2.6	2.6	1.8	1.2	1	1.4	1.4	1.8	1.6

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology / Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co- relation	Low	Medium	High	No
	1	2	3	-

HUMAN HABITAT: THEORIES AND DESIGN THOUGHT			
Course Code	24HDC12	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	3:1:0	SEE Marks	50
Total Hours of Pedagogy	04	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> To introduce the students to theories, concepts and components of human habitat, its determinants, methods of study. To gain exposure and understand the Design theories and their impact on cities. 			
Module-1			
HUMAN HABITAT AND ITS DETERMINANTS			
<ul style="list-style-type: none"> Components of Human Habitat. Socio economic, Cultural and Historic determinants of urban growth and urban form. Idea as determinant –City as Patterns, Diagrams and Spaces. Evolution of cities and towns in India. 			
Module-2			
URBAN FORM AND READING THE HABITAT			
<ul style="list-style-type: none"> Urban design vocabulary: Urban grid, Grain, texture, scale, spaces, massing, enclosure. Reading the urban form through various dimension, experience and behavioural aspects. Environmental perception, cognition, cognitive and mental maps, Image of towns and cities. 			
Module-3			
URBAN DESIGN MOVEMENTS AND THEORIES			
<ul style="list-style-type: none"> Modernism, Postmodernism, structuralism and post structuralism, ideas of self-similarity and fractals, neoclassicism, revivalism and its impact on habitats. Theory of urbanism: Modernization & Urban Development through national and International Perspectives. New Urbanism and everyday Urbanism – Introduction, tools and strategies. Postmodern Urbanism: Contextualism. 			
Module-4			
APPROACHES TO STUDY HUMAN HABITAT			
<ul style="list-style-type: none"> Concepts and Theories of urban form: Imageability, Perception, townscape, and elements of urban design (Gordon Cullen, Kevin Lynch). Introduction to Utopian concepts. Social theories of urban space - Social Life of Small Urban Spaces by William Whyte, Life Between Buildings by Jan Gehl, Life and death of American cities by Jane Jacobs and Karl Marx theories. 			
Module-5			
LAYERING IN A HABITAT			
<ul style="list-style-type: none"> Layering in a habitat: Organic habitats and designed habitats. Historic core and contemporary urbanism. Study of Ideas of historic layering of space and networks, Lattices v/s trees as urban structural metaphors. Urban Social Movement in India and their impacts on habitat evolution. Habitat Design, Urban Design and their relationship with planning and architecture. Role of Habitat Designer. 			
Assessment Details (both CIE and SEE)			
<p>The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p>			

Continuous Internal Evaluation:

1. Two Unit Tests each of 25 Marks.
2. Two assignments each of 25 Marks or one Skill Development Activity of 50 marks to attain the COs and Pos.

The sum of two tests, two assignments/skill Development Activities, will be scaled down to 50 marks

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester-End Examination:

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper will have ten full questions carrying equal marks.
3. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.
5. The students will have to answer five full questions, selecting one full question from each module.

Suggested Learning Resources:**Books**

1. Kevin Lynch, "Imageability of City", The MIT Press, 1960.
2. Camillo Sitte, "City Planning according to Artistic principles", Phaidon Press, 6th Edition, 1965.
3. Kevin Lynch, "Good City Form", The MIT Press, Reprint Edition, 1984.
4. Rob Krier, "Urban Street and Squares", Architectural Press, 3rd Edition, 2003.
5. Gordon Cullen, "Townscapes", Architectural Press, 1st Edition, 1961.
6. Donald Watson, "Time-Savers Standards for Urban Design", McGraw Hill Education, 2017
7. Jan Gehl, "Cities for People", Island Press, 2010
8. Jon Lang, "Creating Architectural Theory", John Wiley & Sons, 2nd edition, 1987. 2. Jon Lang, "UrbanDesign", Architectural Press, 2nd edition, 2017. 3. Kate Nesbit, "Theorizing a New Agenda for Architecture", 2nd edition, 1996. 4. Geoffrey Broadbent, Richard Bunt and Charles Jencks, "Signs, Symbols and Architecture", JohnWiley & Sons, 1st edition-1980.
9. S. Kostoff. (1991), "The City Shaped. London", Thames and Hudson

Web links and Video Lectures (e-Resources):

1. <https://www.jstor.org/stable/40315538>
2. <https://iopscience.iop.org/article/10.1088/1755-1315/764/1/012033>
3. <https://www.jstor.org/stable/23286055>
4. <http://www.petkovstudio.com/bg/wp-content/uploads/2017/03/Urban-design-reader-by-MatthewCarmona-and-Sтивен-Tiesdell.pdf>
5. <https://www.gehlpeople.com>
6. <https://www.research-collection.ethz.ch/bitstream/handle/20.500.11850/113477/eth-48691-01.pdf>

Skill Development Activities Suggested

1. Analysing cities and their components through case-studies.
2. Analysis of Urban projects concerning public spaces, transport nodes and other important components of the public realm.
3. Applying Cognitive Mapping as an important Tool in reconnaissance survey of site area.
4. Evaluating impact of various Urban Theories on Urban Form.
5. Role played by NGOs with respect to issues concerning habitat.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Identify, read and understand components of human habitat	IV
CO2	Familiarization of theoretical approaches related to habitat design	II
CO3	Comprehend the determinants which define urban form	VI
CO4	Rationalizing the role of habitat designers	V
CO5	Analyse and interpret the evolution of Human habitat in India	VI

Program Outcome of this course

Sl. No.	Description	Pos
1	Identifying important components of a habitat	1,2
2	Evaluate components of habitat systems and understand the complex layers of habitat systems	1,3,7,8
3	Familiarization with the existing knowledge base with respect to habitat systems	1,2,7,8
4	Recognize significance of the program and role of various stakeholders to address contemporary habitat issues	2,4,7,8

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	-	-	-	3	2	-	-
CO2	2	3	2	-	-	-	-	1	-	-
CO3	3	3	2	-	-	2	3	3	-	2
CO4	-	-	-	3	-	2	3	3	2	2
CO5	1	3	-	-	-	-	3	1	-	2
Average	1.8	2.2	1.2	0.6	0	0.8	2.4	2	0.4	1.2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

PLANNING THEORY AND TECHNIQUES			
Course Code	24HDC13	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	3:0:1	SEE Marks	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	3
Course Learning objectives:			
<ul style="list-style-type: none"> To introduce the concepts and approaches of planning and execution. To stimulate the problem-solving skills at the planning level using diverse silks and approaches. To familiarize the students with the organisational structure, systems, financial planning, and management. 			
Module-1			
INTRODUCTION TO PLANNING			
<ul style="list-style-type: none"> Planning terms and definitions. Aims and Objectives of Physical Planning. Basic principles of settlement planning and components of settlement structure. Theories of City Development and Planning Theories: Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory and other latest theories. Models of planning: Advocacy and Pluralism in Planning; Systems approach to planning: rationalistic and incremental approaches, mixed scanning and middle range planning; Equity planning; Political Economy. 			
Module-2			
PLANNING LEGISLATIONS AND NEW APPROACHES TO CITY PLANNING			
<ul style="list-style-type: none"> Planning legislations and Legal framework in India, Regulations, Byelaws, Standards and Norms and their basis. Model Town Planning Laws. Town Planning Acts in different states of India; Study of different state Acts and its implications. New city planning approaches- Growth management strategies, Transit-oriented Development, Zoning Mechanisms. Participatory Planning Approaches. 			
Module-3			
PLANNING METHODS			
<ul style="list-style-type: none"> Analytical Methods: Classification of regions, delineation techniques of various types of regions. Land suitability analysis, network analysis; Threshold analysis; Input output analysis, SWOT analysis. Demographic Methods: Methods of population forecasts and projections; urban – rural, urban concentration, metropolitan concentration; Location dimensions of population groups – social area and strategic choice approach – interconnected decision area analysis. 			
Module-4			
RESOURCE MOBILISATION AND IMPLEMENTATION MECHANISM OF PHYSICAL PLANS			
<ul style="list-style-type: none"> Urban Development Plans: Types, scope, purpose, and content. Regional, Metropolitan, Master, Zonal or Local plans. Approaches to preparation of Interim and Comprehensive Plans: Structure Plan, Perspective Plan, Master Plan. Implementation techniques – Financial planning, schemes and programs, organizational structure. Provisions of the plan implementation through the Act- Town Planning Schemes, Land Acquisition, Land Pooling and Transferrable Development Rights (TDR) 			
Module-5			
TECHNIQUES FOR DATA COLLECTION, SURVEY, MAPPING AND ANALYSIS			
<ul style="list-style-type: none"> Land use classification or coding and expected outputs; Techniques of preparing base maps including understanding the concepts of scales, components and detailing for various levels. Methods of collecting various data through primary and secondary sources. Sources of various data in India. Familiarization of techniques- Field Surveys, Questionnaire Design, Sampling and digital mode of data collection. Data Analysis and presentation techniques. 			

Assessment Details (both CIE and SEE)

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Continuous Internal Evaluation:

1. Two Unit Tests each of 25 Marks.
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The sum of two tests, two assignments/skill Development Activities, will be scaled down to 50 marks.

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester-End Examination:

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper will have ten full questions carrying equal marks.
3. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.
5. The students will have to answer five full questions, selecting one full question from each module

Suggested Learning Resources:**Books**

1. Arthur Gallion, "Urban Pattern", John Wiley & Sons; 5th Edition, 2003.
2. Siddhartha N.Mukherjee, "Cities -Urbanization and Urban System", Kitab Mahal, 12th Edition, 2017.Peter Hall,
3. "Urban and Regional Planning", Routledge, 5th edition, 2010.
4. K.P.Yadav, "Vol 1-5- Encyclopedia of Economic Planning and Development", Ivy Publishing House.
5. Abir Bandyopadhyay, "Text Book of Town Planning", Books and Allied Ltd, 2000.

Web links and Video Lectures (e-Resources):

1. <https://www.jstor.org/stable/3517133>
2. <https://www.youtube.com/watch?v=NvHsD4GyCAw>
3. https://www.youtube.com/watch?v=IK0_CY499Kg
4. https://www.youtube.com/watch?v=k2_wuThLG6o
5. <https://www.youtube.com/watch?v=goC4R9oF3Eo>
6. https://onlinecourses.nptel.ac.in/noc21_ar12/preview
7. <https://www.youtube.com/watch?v=wUEOFGs8ZdE>
8. <https://iopscience.iop.org/article/10.1088/1757-899X/603/2/022003>

Skill Development Activities Suggested

1. Research paper on land use-oriented techniques such as land suitability analysis, network analysis, population projection etc.
2. Critical analysis of live planning projects which highlights implementation process, organization structure and resource mobilization.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Understand basic terminologies and approaches followed globally.	I
C02	Understand and Analyse Planning legislations and planning process in the country	II
C03	Understand basic analysis methods	II
C04	Contextualize resource mobilization and implementation techniques	III
C05	Evaluate and apply appropriate Data collection and survey Techniques for Planning	V

Program Outcome of this course

Sl. No.	Description	POs
1	Familiarisation with Planning legislations and regulations which determine the characteristics of Habitats.	1,2,3
2	Critically evaluate and analyse the impact of Planning on Habitats.	2,3,7,8
3	Use of Appropriate survey and sampling techniques based on Research Area.	3,4,9,10

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	1	-	-	-	-	-	-	-	-
C02	3	3	2	-	-	2	1	-	-	-
C03	2	3	3	-	-	-	3	3	3	1
C04	1	3	3	--	-	-	-	-	3	3
C05	-	-	3	3	3	3	-	-	3	1
Average	1.8	2	2.2	0.6	0.6	1	0.8	0.6	1.8	1

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

SOCIOLOGY, CULTURE AND HUMAN HABITAT			
Course Code	24HDS14	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	0:3:0	SEE Marks (TW)	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To understand the theoretical frameworks and concepts in sociology relevant to the study of human habitats. To analyse the dynamics of cultural practices and social structures in shaping human environments. To critically evaluate the impacts of urbanization and Socio-Cultural degradation on human habitats. To explore strategies for sustainable development and community resilience. 			
Module-1			
EVOLUTION OF URBAN SOCIOLOGY			
<ul style="list-style-type: none"> Introduction to Urban Sociology. Theories of Urban Sociology- Emile Durkheim, Georg Simmel, Max Weber, Louis Wirth Overview of Sociological perspectives on human habitats 			
Module-2			
SOCIO-CULTURAL ELEMENTS OF A HABITAT			
<ul style="list-style-type: none"> Society, Community, Caste, Kinship, Family, Culture, Social Institutions, Religious and Spiritual Beliefs. Identity. Social Behaviour and relationships of individuals within the habitat and social dynamics in urban areas, Social Stratification and Networks. Significance of culture and its impact on the physical environment. 			
Module-3			
DEMOGRAPHIC CHARACTERISTICS			
<ul style="list-style-type: none"> Attributes of a population that provide insights into its composition, distribution and trends. Demographic Transition and its influence on the physical environment. Characteristics of communities- Homogeneity & Heterogeneity, Ethnic enclaves, social cohesion, social segregation. Symbiotic relations of communities. 			
Module-4			
SOCIAL INSTITUTIONS AND MIGRATION			
<ul style="list-style-type: none"> Urbanization- Impact and Implications. Evolution and significance of Social Institutions in urban settings. Migration Patterns- Social Disorganization, alienation, Concerns of Privacy, and Identity. Examination of the concept of the neighbourhood through the understanding of socio-cultural aspects. 			
Module-5			
URBAN SOCIAL PROCESSES			
<ul style="list-style-type: none"> Social implications of Gentrification, Neo-liberalization, Globalization. Other Issues- Crime, Gendered Urban Spaces, Contested Spaces. Demonstration of social processes and conditions through illustrations. 			
<p>Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p> <p>Continuous Internal Evaluation: Continuous Internal Evaluation will be based on Assignments, Seminar and Final Portfolio Submission.</p> <p>Semester End Examination:</p> <ul style="list-style-type: none"> The student needs to submit his/her works done throughout the semester, for Term work examination, atleast one day prior to Term Work Examination to the course teacher/coordinator. The term work will be evaluated by an external teacher appointed by the University along with Course teacher or an internal examiner. 			

- The SEE mark list generated is to be signed by both internal and external examiners and submitted to VTU in sealed cover through the principal of the institution.

Suggested Learning Resources:

Books

1. Amos Rapoport, "House form and culture", Pearson Education
2. Jan and Mele, "The Urban Sociology Reader", Routledge, 2012.
3. William Flanagan, "Contemporary Urban Sociology", Cambridge University Press, 1993.
4. Henri Lefebvre, Eleonore Kofman (Editor), Elizabeth Lebas (Editor), "Writings on Cities", Wiley, 1996.
5. Mark Gottdiener, Ray Hutchison, "The New Urban Sociology", Westview Press, 2010.
6. Neil Brenner, Peter Marcuse, Margit Mayer, "Cities for People, Not for Profit: Critical Urban Theory and the Right to the City", Routledge, 2011

Web links and Video Lectures (e-Resources):

1. <https://nptel.ac.in/courses/109104074>
2. <https://researchdirectory.uc.edu/p/russselfp>
3. <https://www.nature.com/articles/srep10265>
4. <https://www.jstor.org/stable/43630965>
5. <https://www.jstor.org/stable/23618928>
6. <https://www.tandfonline.com/doi/full/10.1080/07352166.2016.1255526>
7. <https://www.gacbe.ac.in/images/E%20books/Culture%20and%20every%20day%20life%20.pdf>

Skill Development Activities Suggested

1. On-site study to observe and analyse social dynamics, cultural practices, and human habitats.
2. Analysing and evaluating policies or urban development plans from a sociological perspective.
3. Generate social survey formats.
4. Interpret the demographic characteristics of the identified study area in Habitat Design Studio-I.
5. Recognise the social processes through case-studies.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Key terms related to urban sociology, culture and human habitats	I
C02	Understand relationship between social institutions and human habitats	II
C03	Identify the social and cultural elements organising human habitat	II
C04	To analyse urban social theories in urban development project	III
C05	Analyse spatial implications of social processes	IV
C06	Interpreting human habitat through its socio-cultural characteristics	V

Program Outcome of this course

Sl. No.	Description	POs
1	Understand sociological concepts and theories of human habitats	1, 2, 3, 6, 7, 8
2	Identify the influence of social patterns defining spatial patterns	1, 2, 3
3	Methods to analyse and evaluate the social dimensions in Human Habitat	2, 3, 4, 7, 10

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	1	-	-	-	-	-	-	1	-
C02	2	3	3	1	-	2	3	1	-	3
C03	2	3	2	-	2	2	3	-	-	1
C04	3	3	2	1	2	3	3	1	1	3
C05	2	3	2	1	2	2	2	2	-	2
C06	2	3	2	1	-	2	2	1	-	1
Average	2.3	2.7	2.2	1	2	2.2	2.6	1.3	1	2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

URBAN TRANSPORTATION AND NETWORKS: SPATIAL STRUCTURE OF HABITAT SYSTEM			
Course Code	24HDCL16	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	2:1:1	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> • To introduce the fundamentals of urban transport planning and its significance. • To equip students with a comprehensive understanding of the intricate relationship between urban transportation systems and the spatial structure of urban habitats. 			
Module-1			
TRANSPORT PLANNING- DEFINITIONS AND CONCEPTS			
<ul style="list-style-type: none"> • Urban Transportation systems and their classification; different modes of transport and their technological characteristics; the nature of demand and supply of transport services and integrated planning. • Scope of urban transport planning, land use-transport integration, stages involved in transport planning. 			
Module-2			
MODES OF COMMUTE AND TRAFFIC SURVEYS			
<ul style="list-style-type: none"> • Introduction to pedestrian, motorized, and non-motorized vehicles. Urban Transportation surveys: Definition of the study area, zoning, types of surveys- origin and destination survey, road inventory, classified traffic volume counts, pedestrian survey, parking survey and socio-economic survey. • Forecasting traffic in relation to planned land use. 			
Module-3			
4-STAGE MODELLING			
<ul style="list-style-type: none"> • Trip Generation- Introduction, Definitions, Trip Purposes- Factors associated with Trip generation and Attraction, Method of analysis. • Trip Distribution- Introduction, Methods of Trip Distribution. • Trip Assignment –Definition, Applications, Resistance to travel, Minimum travel path tree- Assignment Techniques. • Modal Split- Introduction, Factors Affecting, Modal Split in the Transportation Planning Process. 			
Module-4			
TRAFFIC AND PARKING MANAGEMENT			
<ul style="list-style-type: none"> • Introduction to traffic management and calming techniques. • Mobility plans - introduction and process - CTTS (Comprehensive Traffic and Transportation Studies), CMP (Comprehensive Mobility Plan) and LCMP (Low Carbon Mobility Plan). • Mobility concepts and universal accessibility. 			
Module-5			
COMPREHENSIVE TRANSPORTATION SURVEYS AND MOBILITY PLAN			
<ul style="list-style-type: none"> • Transportation surveys and data collection • Use of transportation modelling • Analysis of the findings • Conceptual framework development • Proposals of Mobility plan 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- Studio work, Seminar or micro-Project. The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> 1. Methods suggested: Submission of the studio work on regular basis in the form of drawings, models, reports of site/field trips etc. 2. The course faculty must decide the topic for the studio work and other assignments based on the design brief of Habitat Design Studio-1. 3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
Suggested Learning Resources:			
Books			
<ol style="list-style-type: none"> 1. Khanna and Justo, "Highway Engineering", Nem Chand & Bros , 10th edition, 2015. 2. Kadiyali L R., "Traffic Engineering and Transportation Planning", Khanna Publishers, 3rd Edition, 1987. 3. Dimitriou H.T, "Urban Transport Planning and Developmental Approach", Routledge, 1st Edition, 2012. 			

4. Michael J Bruton, "An Introduction to Transportation Planning", Hutchinson, 2nd Edition ,1970.
5. John Black, "Urban Transport Planning and Design", the Johns Hopkins University Press, 1981.
6. Vukan R. Vuchic, "Urban Transit: Operations, Planning, and Economics", Wiley, 1st Edition,2005.
7. Vukan R. Vuchic, "Urban Transit Systems and Technology", Wiley, 1st Edition, 2007.

Web links and Video Lectures (e-Resources):

1. <https://www.itdp.in/wp-content/uploads/2016/07/Urban-street-design-guidelines.pdf>
2. <https://islandpress.org/blog/forewordfriday-global-street-design-guide-edition>
3. <https://globaldesigningcities.org/publication/global-street-design-guide/defining-streets/what-is-a-street/>
4. <https://shaktifoundation.in/wp-content/uploads/2014/02/Universal-accessibility-guidelines.pdf>
5. <https://wrirosscities.org/sites/default/files/India-Integrated-Transport-Indicators-EMBARQ.pdf>
6. <https://www.jtlu.org/index.php/jtlu/article/view/425>

Skill Development Activities Suggested

Generating formats for traffic surveys - Qualitative and Quantitative aspects.

1. Conducting field surveys and site visits to gather firsthand information and validate secondary data.
2. Analysis of urban transport projects concerning trip demands, modal split, parking management and other important components of habitat system.
3. Developing conceptual models and frameworks to understand the spatial structure and dynamics of urban transportation systems.
4. Analysis the development of an integrated land use/transport strategy for delineated area of inner city.
5. Proposing design and planning solutions to address the identified problems and improve urban transportation networks.
6. Understanding selected emerging contemporary transportation issues and their impact on the society.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Students are equipped with the fundamentals of urban transport planning, transport modelling and policies.	I, II, IV
C02	Understanding the issues & challenges in the Transportation Sector.	II, III, IV
C03	Students are equipped with theoretical knowledge combined with the practical applications in the field of urban transportation.	II, III, IV
C04	Student will learn methods of designing, conducting and administering surveys to provide the required data.	II, III, IV, V
C05	Generating strategies and proposing mobility plan for identified inner-city district.	III, IV, V, VI

Program Outcome of this course

Sl. No.	Description	POs
1	Students are equipped with the fundamentals of urban transport planning, transport modelling, policies and its implications on the spatial structure of habitats.	2, 3, 4, 7, 10
2	Analyse and interpret the evolution of Human habitat wrt transport sector.	2, 3, 5, 7, 8
3	Evaluate the contemporary dimensions of habitat design and planning.	3, 4, 5, 6, 10
4	Understanding the connection between transportation, land use, and habitat system.	1, 2, 3

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	1	-	-	-	-	2	2	-	3
C02	3	1	1	-	-	1	2	2	-	2
C03	3	3	2	2	3	2	2	2	-	2
C04	2	2	2	2	-	2	3	3	-	2
C05	2	3	3	2	3	2	3	3	1	2
Average	2.3	2.7	2.2	1	2	2.2	2.6	1.3	1	2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

GIS - I			
Course Code	22HDE151	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-

Course Learning objectives:

- To enable working with different data sets, data collection, mapping, analysis and creating presentation maps using Geographic Information Systems.

Module-1

Introduction to Spatial Science

- Introduction to Maps, Map scale and Spatial data, working with google earth pro software, Concepts of Point, Line and Polygon, Advantages of GIS, Components of GIS, Types of GIS software, GIS Data formats (Raster & Vector)

Module-2

Mobile GIS & Web GIS

- Introduction to Mobile GIS – Needs, Advantages, Field Data Collection Mobile App Customization, Exporting Field Data collected to Desktop GIS.
- Introduction to web GIS, Hands on Working with no-code web GIS map.

Module-3

Working with different types of Data sets

- Adding Vector, Raster, CSV data in QGIS, Working with Attribute toolbar (i-tool, attribute table tool etc.)
- Working with Attribute Table – Add, Delete, column. Changing attribute information.
- Working with the Selection toolbar (select features, deselect features etc.)
- Styling & Labelling the maps, Data Filtering / Data Querying.

Module-4

GIS Data Management

- Geo-referencing and projecting Raster Data, Creating Vector Data Model and Shapefile Creation.
- Digitization / Vectorization – Point, Line & Polygon, Creating Attributes – Text, Number, Float, Date etc.
- Advanced Digitization tool – (Snapping toolbar, advanced digitizing toolbar)
- Working with Plugins Menu – Manage and Install Plugins, Map Layout and Exporting Map in Different Format.

Module-5

Raster and DEM Data Analysis

- Raster Data Introduction, Sources of Raster Data – Bhuvan, USGS.
- Working with DEM data - contours, slope, hillshade, aspect Map, DEM Data watershed analysis, Total Station data to DEM data creation.
- Preparation of Cartographic Maps – Choropleth, Bar, Pie, and Stacked.

Assessment Details: Methods of CIE need to be defined topic wise i.e.- Studio work, Seminar or micro-Project.

The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.)

The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.

Continuous Internal Evaluation:

- Methods suggested: Submission of the studio work on regular basis in the form of drawings, models, reports of site/field trips etc.
- The course faculty must decide the topic for the studio work and other assignments bases on the design brief of Habitat Design Studio 1
- CIE marks to be awarded at the end of semester and to be uploaded to VTU portal.

Suggested Learning Resources:

Books

- George Joseph, Fundamentals of Remote Sensing, 2004, Universities Press Pvt.Ltd., Hyderabad.
- Lilesand T.M. and Kiefer R.W., 2002, Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.
- Mohini Bherwani, (2012), Metadata in context to open source Software, Published by Dattsons.
- "QGIS for Geographic Information System Professionals" by Kurt Menke
- "Building Mapping Applications with QGIS" by Erik Westra.

Web links and Video Lectures (e-Resources):

1. www.qgis.org
2. www.gisgeography.com
3. www.bhuvan.nrsc.gov.in
4. <https://gistbok.ucgis.org/bok-topics/spatial-queries>

Skill Development Activities Suggested

1. Composing maps for Habitat Design Studio using GIS.
2. Tracing Morphology of any chosen Habitat by digitizing old maps and datasets.
3. Understanding River Valley Systems of any chosen area.
4. Practice with open-source data sets from across the world and web mapping frameworks.
5. Learning how to use GIS Forums and Community support groups for peer-to-peer learning for technical assistance and query resolution.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Understanding basics of spatial data and mapping in GIS	I
C02	Field mapping and collecting data using Mobile GIS	II
C03	Compose map in QGIS	VI
C04	Creation of Base maps for site areas	III
C05	Visualising data and making custom maps	V

Program Outcome of this course

Sl. No.	Description	POs
1	Understand mapping as a crucial tool in Habitat data analysis.	2, 4, 10
2	Creating base maps of study areas using existing open source data sets and from field mapping, upon which further research and analysis can be carried out. BT II III	1, 2, 3, 4, 9
3	Spatial representation of various types of data related to habitats. Inferencing from datasets.	3, 5, 9, 10,7

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	1	-	3	-	-	-	-	1	3
C02	2	1	2	3	1	2	-	-	-	
C03	1	3	2	3	2	1	2	2	1	3-
C04	2	2	3	3	2	1	2	2	3	3
C05	-	3	3	3	-	-	-	-	2	2
Average	1.6	2	2	3	1	1	0.8	0.8	1.4	2.2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co- relation	Low	Medium	High	No
	1	2	3	-

REPRESENTATION TECHNIQUES			
Course Code	24HDE152	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To equip students with a comprehensive understanding of various representation techniques essential for Habitat Design Studio. 			
Module-1			
IMPORTANCE OF REPRESENTATION IN HABITAT DESIGN			
<ul style="list-style-type: none"> Basic Principles and modes of Representation, Importance of communicating concepts, ideas and data effectively. Different types of representation techniques: Visual, digital, and mixed media. Traditional Representation Techniques- context of urban public spaces. 			
Module-2			
METHODS TO DOCUMENT AND PRESENT VISUAL SURVEYS			
<ul style="list-style-type: none"> Observation and Interpretation of Urban Environment Recording, Representing, and Communicating Observations Graphic Language of Analysis and Design 			
Module-3			
DIGITAL REPRESENTATION TECHNIQUES			
<ul style="list-style-type: none"> Data representation through various digital software. Digital Photography and Image Processing. Data Visualization and Infographics Rendering techniques for realistic visualizations. Creating thematic maps and spatial data visualization. 			
Module-4			
MODEL MAKING – DIGITAL AND PHYSICAL MODELS			
<ul style="list-style-type: none"> Introduction to digital fabrication tools such as laser cutters, 3D printers. Using models to explore design ideas and concepts. Applications of digital fabrication in urban scale projects. 			
Module-5			
IMMERSIVE TECHNOLOGIES IN URBAN DESIGN REPRESENTATION			
<ul style="list-style-type: none"> Basics of VR and AR in Habitat Design. Tools and software for creating Walk throughs, animations and simulations. 			
Assessment Details: Methods of CIE need to be defined topic wise i.e.- Studio work, Seminar or micro-Project.			
The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.)			
The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.			
Continuous Internal Evaluation:			
1. Methods suggested: Submission of the studio work on regular basis in the form of drawings, models, reports of site/field trips etc.			
2. The course faculty must decide the topic for the studio work and other assignments bases on the design brief of Habitat Design Studio 1.			
3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal.			
Suggested Learning Resources:			
Books			
1. Urban Design Associates. (2003). The Urban Design Handbook. W. W. Norton & Company.			
2. Farrelly, L. (2011). Drawing for Urban Design. Laurence King Publishing.			
3. Ciriello, M. (2017). Digital Drawing for Urban Design. Routledge.			
Web links and Video Lectures (e-Resources):			
1. https://www.youtube.com/watch?v=I_bjPNnO3HQ&ab_channel=TheSketchUpEssentials			
2. https://www.youtube.com/playlist?list=PL269fVnvu-3Gen1kWJ2Udqy6pBpLKicHe			
3. https://www.youtube.com/c/ponoko/videos			

Skill Development Activities Suggested

1. Activities related to documentation of temporal changes in public spaces.
2. Massing of Urban environment using Digital representation tools.
3. Application of GIS Mapping for generating maps.
4. Exploring Model making for Habitat Design Studio Project.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Learning of various software like SketchUp, AutoCAD, Rhino, etc	II
C02	Analyse and interpret different maps using mapping techniques	IV
C03	Evaluate and choose the methods to be applied for representation	V
C04	Familiarisation of physical, digital, and mixed media	II
C05	Application of advanced modes of presentation – AR, VR etc	V

Program Outcome of this course

Sl. No.	Description	POs
1	Identifying different modes of Presentation	1, 2
2	Understand how to interpret maps	1, 2, 3, 7, 8
3	Familiarisation with the digital mapping and model making techniques	1, 2, 7, 8
4	Advancement in technology w r to Representation of ideas and concept	2, 4, 7, 8

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	2	2	3	-	-	-	-	-	-	-
C02	3	3	2	-	-	-	-	-	-	-
C03	3	3	2	-	-	2	-	-	-	2
C04	-	-	-	3	-	2	-	-	2	2
C05	2	3	-	-	-	-	-	-	-	2
Average	1.8	2.2	1.2	0.6	0	0.8	-	-	0.4	1.2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

DATA ANALYTICS			
Course Code	24HDE153	CIE Marks	100
Teaching Hours/Week (L:P: SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> Interpreting data to analyse cities and settlements as dynamic systems, uncovering correlations and relationships within urban environments. 			
Module-1			
Utilizing Data for Habitat System Understanding:			
<ul style="list-style-type: none"> Explore the role of data in comprehending habitat systems and apply datasets to evaluate their interactions using a systems approach. Identify the characteristics of datasets and utilize data science libraries for analysis. 			
Module-2			
Analysis of Consumption Patterns and Resource Management:			
<ul style="list-style-type: none"> Gain insights into consumption patterns, resource management, and allocation in settlements through proficient data assimilation and interpretation. 			
Module-3			
Data's Influence on Policy Formulation and Decision Making:			
<ul style="list-style-type: none"> Understand how data guides policy formulation and aids in the decision-making process. 			
Module-4			
Development Perspectives Generation:			
<ul style="list-style-type: none"> Generate development perspectives using modelling, simulation, and visualization techniques, effectively integrating software platforms for analysis. 			
Module-5			
Interpretation of Habitat Context Scenarios:			
<ul style="list-style-type: none"> Interpret scenarios relevant to habitat contexts, addressing identified concerns and issues. Utilize spatial information systems, R Software, and digital applications for data interpretation. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> Methods suggested: Submission of assignments on regular basis. The course faculty has to decide the assignments and topics based on the modules. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
Suggested Learning Resources:			
Books			
<ol style="list-style-type: none"> Rae A & Cecilia W, Applied Data Analysis for Urban Planning and Management, SAGE Publications Ltd, October 2021. Bibri S E, Big Data Science and Analytics for Smart Sustainable Urbanism, Springer Cham, 2019. Yigitcanlar T & Kankanamge N, Urban Analytics with Social Media Data, Routledge, 2022. Batty, M, The new Science of Cities. The MIT Press, 2013. Singleton A D & Folch D, Urban Analytics, SAGE Publications, 2017 			
Web links and Video Lectures (e-Resources):			
<ol style="list-style-type: none"> https://journals.sagepub.com/description/EPB https://sukalp.crdp.org.in/thematic-area/13/urban-data-analytics#podcasts 			
Skill Development Activities Suggested			
<ol style="list-style-type: none"> Gathering, evaluating, and managing data. Creating models and simulations for data sets. Developing scenarios for various habitat conditions. Linking the generated outcomes to policy decisions. 			

Course outcome (Course Skill Set)										
At the end of the course the student will be able to:										
Sl. No.	Description									Blooms Level
C01	Evaluate data sets for various habitat systems.									II
C02	Manage data sets by integrating digital platforms.									III
C03	Interpret data to effectively communicate the analysis.									IV
C04	Use analysed data for policy formulation and decision-making.									VI
Program Outcome of this course										
Sl. No.	Description									POs
1	Facilitates understanding of the complexities of urban habitat systems.									1,2,3,7,8
2	Enables interpretation of habitat systems by integrating multiple data layers.									2,3,4,7,8,10
3	Serves as an effective tool for informed policymaking.									2, 3, 5, 6, 7, 8
Mapping of COS and POs										
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	3	1	3	-	-	1	1	2	3
C02	3	3	2	3	-	-	-	-	-	3
C03	2	3	2	3	-	-	-	-	2	3
C04	2	3	3	3	3	-	2	2	-	3
Average	2.5	3	2	3	3	0	1.5	1.5	2	3
Graduate Attributes										
Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning	
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	
Mapping Co-relation	Low			Medium			High		No	
	1			2			3		-	

Semester- II

HABITAT DESIGN STUDIO-II (HISTORIC URBAN CORE)			
Course Code	24HDC21	CIE Marks	50
Teaching Hours/Week (L:P: SDA)	2:7:1	SEE Marks	50
Total Hours of Pedagogy	9	Total Marks	100
Credits	9	Exam Hours	-
<p>Course Learning objectives:</p> <ul style="list-style-type: none"> • Studio aims to sensitize students to the complexities within a Historic urban core/inner city and comprehend the nature of intervention. 			
<p>Studio Outline</p> <ul style="list-style-type: none"> • To examine and intervene in a delineated area of Historic urban core/inner city. • Importance of Urban conservation with respect to historic context of site. • Documenting the existing urban fabric with emphasis on the cultural values, infrastructure provision, Environmental processes, Socio-economic aspects and political environment. • Significance of user group engagement and methods of stakeholder participation in program development and project formulation. • Implementation framework to form integral part of the project structuring. • Develop appropriate strategies to address objectives of historic preservation, inner-city regeneration/redevelopment. • Diagnose implications of suggested interventions on the larger urban fabric, to re-examine values in terms of social, physical and progressive nature of change. <p>Documentation and Analysis may be carried out in groups and interventions to be submitted individually.</p> <p>Integrated Studio Course (ISC)</p> <ol style="list-style-type: none"> 1. Social infrastructure and the public life of cities: Understanding urban sociality and public spaces in Core areas. 2. Aspects of Human networks, Associational Values, Social segregation, Overcrowding, Contested Spaces, Crime and Gender issues. 			
<p>Assessment Details (both CIE and SEE)</p> <p>For Professional Studio Core Course Integrated with the theories/software relating to the studio. The theory part of the ISC shall be evaluated by CIE with regular assignment. The studio part shall be evaluated by both CIE & SEE (Viva-Voce with the external examiner).</p> <p>The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p> <p>Continuous Internal Evaluation:</p> <p>Continuous Internal Evaluation will be based on</p> <ol style="list-style-type: none"> 1. Seminars, Assignments, and Studio Discussions for ISC component. 2. Two Internal Reviews, two External Reviews and Final Portfolio Submission for Studio component. <p>Semester End Examination:</p> <p>Viva-voce: The viva voce shall be conducted in two phases, firstly for the group work followed by Viva Voce for individual interventions. Weightage ratio of 70:30.</p>			
<p>Suggested Learning Resources:</p> <p>Books</p> <ol style="list-style-type: none"> 1. Geoffrey Broadbent, "Emerging concepts in urban space design", Taylor & Francis, 1st Edition, 1995. 2. Dew, Berry and Davis, "Land Development Handbook, Planning Engineering and Surveying", McGraw-Hill, 3rd Edition 1998. 3. Cliff Moughtin, "Urban Design – Green Dimensions", Architectural Press, 2nd Edition 1996. 4. Robert K. Home, "Inner City Regeneration", University Press, Cambridge, 1982. 5. David Donnison (Editor), Alan Middleton (Editor), "Regenerating the Inner City: Glasgow's Experience", Routledge Library Editions: Urban Planning Book 10, 1987. 6. Kanad Pankaj, "Renewal for Smart Cities: A Study on Inner-City Area of Bhopal, India", LAP LAMBERT Academic Publishing, 2018. 7. Gamble, D., & Heyda, P. Rebuilding the American City: Design and Strategy for the 21st Century Urban Core. Routledge, 2015. 8. Tyler, N., Ligibel, T. J., & Tyler, I. R. Historic Preservation: An Introduction to Its History, Principles, and Practice (3rd ed.). W. W. Norton & Company, 2018. 			

Web links and Video Lectures (e-Resources):

1. <https://www.adb.org/sites/default/files/publication/27553/revitalization-inner-city.pdf>
2. <https://www.taylorfrancis.com/books/mono/10.4324/9781315889085/inner-city-regeneration-robert-home>
3. <https://www.researchgate.net/publication/289847994> Inner City Regeneration
4. <https://khristinealvarez.com/wp-content/uploads/2020/07/mbarek-et-al.-eds-2020-cities-of-dignity-urban-transformations-around-the-world.pdf>
5. <https://architexturez.net/doc/az-cf-21806>
6. <https://eopcw.com/find/video/855/course>

Skill Development Activities Suggested

1. Reading the layers of historic urban core/inner-city habitat.
2. Generate framework to study the relationships between various aspects of the inner-city.
3. Participatory approach in planning for historic urban core/inner-city habitat.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Identify the components of inner-city areas	III
C02	Analyse the infrastructure provision challenges in the inner-city	IV
C03	Identify tools for user engagement in inner-city habitat issues	V
C04	Generate strategies and develop design interventions for identified inner-city district	VI
C05	Evaluate the implication of suggested strategies and design interventions	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Comprehend the complexities of inner-city areas in a city.	1, 2, 3, 4, 7, 8, 9
2	Evaluate the parameters to consider for planning/redeveloping inner-city areas.	2, 3, 4, 5, 7, 8, 9
3	Generate framework to arrive at appropriate implementation mechanism for suggested strategies.	2, 3, 4, 5, 7, 8, 9, 10

Mapping Cos and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	3	2	1	1	1	2	2	3	2
C02	3	3	2	2	1	1	2	2	3	2
C03	2	3	3	2	1	1	2	3	3	2
C04	2	2	3	3	3	1	3	3	1	2
C05	2	3	2	3	3	1	3	3	1	2
Average	2.4	2.8	2.4	2.2	1.8	1	2.4	2.6	2.2	2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

LANDUSE STRUCTURE AND URBAN MORPHOLOGY			
Course Code	24HDC22	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	3:1:0	SEE Marks	50
Total Hours of Pedagogy	4	Total Marks	100
Credits	4	Exam Hours	3
Course Learning objectives:			
<ul style="list-style-type: none"> To understand urban geography and its influencing factors such as impact of history and culture, technological advancements and growth systems. 			
Module-1			
INTERPRETING THE URBAN GEOGRAPHY			
<ul style="list-style-type: none"> Introduction to urban geography – Triggers and Outcomes of urbanization. Study of patterns of distribution and interaction within cities, from quantitative, qualitative, structural, and behavioural perspectives. Understanding Urban Geography through: Spatial representation, Contemporary and Traditional methods. 			
Module-2			
EVOLUTION OF LAND USE AND URBAN FORM- HISTORICAL PERSPECTIVE			
<ul style="list-style-type: none"> Renaissance and the Re-configuration of space. Industrial revolution, Technologies and the 19th century transformation of world views. Compression of time-space and the birth of Suburbia, Idealized Space, Romanticism and the Garden City Movement. Ideal-Space diagram and city form. Astronomy and city structure. Vaastu Shastra, Sacred Geographies, Sacred Cities. Mapping the Sacred: Sacred Rivers, Ghats, Mounds, Trees and other Totems in Urban Space. 			
Module-3			
URBAN FORM AND SOCIETY			
<ul style="list-style-type: none"> The elements of urban form: the urban tissue, the natural context, the streets system, the plots system, the building's system. Significance, Signs and meaning of structure in social context. Modern work rituals and the definition of fragmented zones, time space and lives. Imagined places, collage of time space representations in Literature, Cinema and the Performing Arts. 			
Module-4			
INTRODUCTION TO COMPUTATIONAL URBAN MORPHOLOGY			
<ul style="list-style-type: none"> Evolution and comparative analysis of computational morphology methods. Case studies using various methods. Spatial morphology and Space Syntax-Evolution and Practical applications. Indicators for spatial analysis. 			
Module-5			
URBAN GROWTH AND SYSTEM OF CITIES			
<ul style="list-style-type: none"> Growth of metropolitan and mega cities: scale, complexity. Metropolitan growth– Trends, characteristics, challenges, socio-economic and political issues in India and other Asian Geographies. 			
Assessment Details (both CIE and SEE)			
<p>The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p>			
Continuous Internal Evaluation:			
<ol style="list-style-type: none"> Two Unit Tests each of 25 Marks Two assignments each of 25 Marks or one Skill Development Activity of 50 marks to attain the COs and POs <p>The sum of two tests, two assignments/skill Development Activities, will be scaled down to 50 marks</p> <p>CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.</p>			
Semester-End Examination:			
<ol style="list-style-type: none"> The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50. The question paper will have ten full questions carrying equal marks. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module. Each full question will have a sub-question covering all the topics under a module. 			

5. The students will have to answer five full questions, selecting one full question from each module.

Suggested Learning Resources:

Books

1. Spiro Kostoff, "City shaped", Bulfinch, Reprint Edition, 1993.
2. Sumita Ghosh, "Introduction to settlement geography", Orient Black Swan, 1998.
3. Michael Pacione, "Urban Geography: A Global perspective", Routledge; 1st Edition, 2009.
4. Paul L Knox, "Urbanization", Pearson, 2012.
5. Diana L. Eck, "India: A Sacred Geography", Three Rivers Press, 2013.
6. Barnabas Calder, "Architecture: From Prehistory to Climate Emergency" Pelican Books, 2021.

Web links and Video Lectures (e-Resources):

1. <https://link.springer.com/book/10.1007/978-3-319-76126-8>
2. <https://ocw.mit.edu/courses/4-241j-theory-of-city-form-spring-2013/>
3. <https://ocw.mit.edu/courses/11-949-city-visions-past-and-future-spring-2004/>
4. <https://www.coursera.org/lecture/asian-environmental-humanities/hindu-notions-of-matter-and-%20environment-b10RV>
5. <https://www.coursera.org/lecture/asian-environmental-humanities/hindu-notions-of-matter-and-%20environment-b10RV>
6. <https://www.youtube.com/watch?v=knpSuqcH20c>
7. <https://www.jstor.org/stable/40343806>

Skill Development Activities Suggested

1. Study of society and lifestyle changes on urban form of any Indian city.
2. Mapping Historic cultural Landscapes.

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

Sl. No.	Description	Blooms Level
CO1	Understand perceptive and cognitive elements of City Structure.	I
CO2	Analyse the factors that shape Urban Morphology	IV
CO3	Understand Urban growth and system of cities	II
CO4	Evaluate historic urban settlements and their growth factors	V
CO5	Understand growth of Indian and Asian cities and their future directions	II

Program Outcome of this course

Sl. No.	Description	POs
1	Understand cities as by-products of Historical events scientific discoveries and political decisions	1,2,7
2	Analyse rhythms of the city and their implications on site area	2,3,7,10
3	Understand Metropolitan growth challenges in developing economies and their impact on habitat design.	2,3,7,8,9

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	-	-	-	--	-	2	2
CO2	3	3	3	2	-	-	2	2	1	1
CO3	3	3	-	-	-	-	-	-	-	3
CO4	1	3	3	-	-	-	3	3	2	1
CO5	3	3	2	-	-	2	2	2	-	-
Average	2.6	2.7	1.8	0.4	-	0.4	1.6	1.4	1	1.4

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

URBAN DEVELOPMENT AND ENVIRONMENTAL LAWS			
Course Code	24HDC23	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	3:0:0	SEE Marks	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> To familiarize the students with legal frameworks related to Urban Development and Environmental Conservation. To understand the roles of different government agencies and organizations in urban planning and environmental protection. 			
Module-1			
INTRODUCTION TO LAWS			
<ul style="list-style-type: none"> Concepts – Sources of law, meanings of the terms: Law, Legislations, Ordinances, Bills, Acts, Regulations, and byelaws. Role of various Organizations in framing and implementing laws, regulations, and acts. Evolution of Planning Legislation in India. 			
Module-2			
LEGAL TOOLS CONNECTED WITH URBAN PLANNING AND DEVELOPMENT			
<ul style="list-style-type: none"> Town and Country Planning, Improvement Trust and Development Authorities: Role and Objectives. Contents and procedures for preparation and implementation of regional plans, Development Plans, Town Planning Schemes and Area Plans. 			
Module-3			
LEGISLATION RELATED TO USE AND CONTROL OF LAND			
<ul style="list-style-type: none"> Land acquisition, Transfer of Development Rights. Significance of land development control – Objectives and legal tools, critical evaluation of Zoning and Subdivision regulations, Building regulations and Byelaws, Development Code. 			
Module-4			
LEGISLATION RELATED TO URBAN AND ENVIRONMENTAL CONSERVATION			
<ul style="list-style-type: none"> Legislation on Conservation of natural resources including Mining and Forestry Acts (MOEFCC) Coastal Zone Regulations. Conservation and Management of Ancient Monuments and Archaeological sites and ruins. Legal Framework: Urban Heritage Conservation. National Green Tribunal. Environment v/s Development – Approaches and Analysis. 			
Module-5			
ENVIRONMENT MANAGEMENT SYSTEMS			
<ul style="list-style-type: none"> Need for EMS. ISO – 14001 and its planning implications, Need of ISO, case studies of ISO certified industries, Environmental and Financial Benefits of ISO. Guidelines for Sustainable development by TERI, GRIHA and IGBC. 			
Assessment Details (both CIE and SEE)			
<p>The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p>			
Continuous Internal Evaluation:			
<ol style="list-style-type: none"> Two Unit Tests each of 25 Marks Two assignments each of 25 Marks or one Skill Development Activity of 50 marks to attain the COs and POs 			
<p>The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks CIE methods /question paper is designed to attain the different levels of Bloom’s taxonomy as per the outcome defined for the course.</p>			
Semester-End Examination:			
<ol style="list-style-type: none"> The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50. 			

- The question paper will have ten full questions carrying equal marks.
 - Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
 - Each full question will have a sub-question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Suggested Learning Resources:

Books

- Herbert Girardet, (1996) "The GAIA Atlas of Cities", new edition, Gaia Books Ltd.
- C S Yadav, "Urban planning and Policies -Volume 16-A -Part A: Reorientation of Policy Norms", Concept Publishing Company.
- S. Kostoff. (1991), "The City Shaped. London", Thames and Hudson.
- Kevin Lynch, (1995) "City sense and city design", The MIT Press.
- P Leelakrishnan, (2016), Environmental Law in India, (4th Ed.).
- Shyam Divan, (2001), "Environmental Law and Policy in India: Cases, Materials and Statutes." (2nd ed.), OUP India.
- Kulkarni, V., & Ramachandra, T. V. (2006). Environmental Management. Capital Publishing Company.

Web links and Video Lectures (e-Resources):

- https://onlinecourses.swayam2.ac.in/cec20_ge12/preview
- <https://www.gsd.harvard.edu/course/land-use-and-environmental-law-fall-2021/>
- <https://www.youtube.com/watch?v=rZnFnFdbLHg>
- <https://www.youtube.com/watch?v=tsmByPHQedA>
- https://www.youtube.com/watch?v=YL_FOI2wuUs

Skill Development Activities Suggested

- Understanding the National Building Code and its implications on urban habitats.
- Critical analysis of the master plan of any city.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Familiarisation with the prevailing legal environment.	II
C02	Orientation to evolve development strategies in the context of legal framework	II
C03	Comprehend intervention in the context of sensitive ecological settings and the IV permissible provisions.	IV
C04	Familiarisation to interpret laws in the context of heritage conservation	II
C05	Identify tools for objective evaluation of planning implications	III

Program Outcome of this course

Sl. No.	Description	POs
1	Identify tools for objective evaluation of planning implications	1, 2, 3, 7
2	Sensitize the students on various legislations that impact Urban Development	1, 2, 3, 7, 10
3	Establish the correlation between Legislations, Environments and Sustainable Development	1, 3, 6, 7

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	-	-	-	-	3	3	-	-	-
C02	1	3	3	-	-	3	1	-	-	-
C03	-	-	3	-	-	3	3	3	2	-
C04	-	-	3	-	-	-	2	-	2	-
C05	-	-	-	3	2	-	2	2	-	2
Average	0.8	0.6	1.8	0.6	0.4	1.8	2.2	1	0.8	0.4

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co- relation	Low	Medium	High	No
	1	2	3	-

Housing and Real Estate			
Course Code	24HDS24	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	1:2:1	SEE Marks (TW)	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> • To understand the housing dynamics, real-estate market mechanisms and their implications on the process of resource mobilization and city development. 			
Module-1			
INTRODUCTION TO HOUSING			
<ul style="list-style-type: none"> • Housing a process: Definitions and components of housing and settlement. Housing concepts and characteristics. • Introduction to the housing market and its dynamics: housing demand, supply and gap. • Housing stock, prices and consumption patterns. 			
Module-2			
HOUSING PROVISIONS AND FINANCE			
<ul style="list-style-type: none"> • Introduction to Housing tenure, affordability and challenges: Home ownership, Rental Housing. Housing Affordability. • Housing Stress - its impact (Social and Economic) on the households. • Methods of enabling housing - Public Housing, Sites and Services, Self Help Groups, NGO engagement. • Role of NHB, Housing finance companies (HFC's), Co-operatives, and Role of Microfinance. 			
Module-3			
INTRODUCTION TO REAL ESTATE			
<ul style="list-style-type: none"> • Fundamental concepts in Real estate and techniques involved in Real estate Development Process. • Sequential events in real estate development process and the factors affecting Real Estate market. • Real Estate Regulation and Techniques- Real estate laws, rent control laws and other legal frameworks. • Rating system in Real-estate market, Residex Index and Real estate regulations. 			
Module-4			
STAKEHOLDERS IN HOUSING & REAL ESTATE			
<ul style="list-style-type: none"> • International investments and packaging, implications on the Real estate market, public-private participation and Real-estate development agencies. FDI in the real estate sector. • Methods and tools useful for making investment and finance decisions. Innovative Approaches (HUDCO, BUPP, NGO) Role of NRIs and PIOs in the investment market. • Role of Public and Private Sector-Innovative Approaches- HUDCO, BUPP, NGO, Housing Boards, Building Societies, Co-operative approaches. 			
Module-5			
PROJECT FORMULATION AND DEVELOPMENT PROCESS			
<ul style="list-style-type: none"> • Introduction to the tools and concepts for project formulation of green field and redevelopment projects. • Practical Exercise on: <ul style="list-style-type: none"> a) Exploring Housing Finance. b) Greenfield and Brownfield Developments. c) Real estate project formulation and development process. d) Building Housing Communities. e) Understanding Township Project: Focus on Housing Market. f) Communities and Neighborhood. 			

Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

Continuous Internal Evaluation will be based on Assignments, Seminar and reports.

Semester End Examination:

- The student needs to submit his/her works done throughout the semester, for Term work examination, atleast one day prior to Term Work Examination to the course teacher/coordinator.
- The term work will be evaluated by an external teacher appointed by the University along with Course teacher or an internal examiner.

The SEE mark list generated is to be signed by both internal and external examiners and submitted to VTU in sealed cover through the principal of the institution.

Suggested Learning Resources:

Books

1. Michael Ball, Colin Lizieri, Bryan D. Macgregor, "The Economics of Commercial Property Markets", Routledge, 1st Edition, 1998.
2. Adrienne Schmitz, Deborah L Brett, "Real Estate Market Analysis: A Case Study Approach", Urban Land institute, 2nd Edition, 2001.
3. Mike E. Miles, Laurence M. Netherton, Adrienne Schmitz, "Real Estate Development: Principles and Process", Urban land institute, 5th Edition, 2015.
4. Prashant Das and Divyanshu Sharma, "Real Estate Finance in India", Sage Publications, 2013.
5. CA Madhukar Hiregang, CA Virender Chauhan, CA Sudhir V S and CA Roopa Nayak, "A Practical Guide to GST on Real Estate Industry", Bloomsbury, 2019.
6. Krishnamurthy and S.V. Ravindra, "Construction Management", CBS Publishers & Distributors Pvt. Ltd, 2nd Edition, 2017.
7. Prasanna Chandra, "Projects Planning, Analysis, Selection, Financing, Implementation and Review", McGraw-Hill, 8th Edition, 2017.
8. L S Srinath, "PERT and CPR- Principles and Application", Affiliated East-West Press, 2001.
9. Harold Kerzner, "Project Management", Wiley, New York, 2003.
10. Chitkara, "Construction Project Management", Tata McGraw- Hill, New Delhi.
11. Kamaraju Ramakrishna, "Essentials of Project Management", PHI Learning, New Delhi, 2010.
12. Weimer, Arthur and Hoyt. "Principles of Real estate" The Ronald press Co.
13. Cedric Pugh, "Housing and Urbanization", SAGE Publications Pvt. Ltd; 1st Edition, 1990.
14. Kavita Datta and Gareth Jones, "Housing Finance In Developing Countries", Routledge, 1st Edition, 2012.

Web links and Video Lectures (e-Resources):

1. <https://exced.gsd.harvard.edu/real-estate-development-fundamentals>
2. <https://www.youtube.com/watch?v=SBZGsjL4uWo>
3. <https://www.youtube.com/watch?v=OkAhcWemp9M>
4. <https://www.wricitiesindia.org/content/sustainable-housing>
5. <https://mohua.gov.in/cms/schemes-or-programmes.php>
6. <https://www.wri.org/insights/confronting-urban-housing-gap>
7. <https://www.worldbank.org/en/news/infographic/2016/05/13/housing-for-all-by-2030>
8. <https://unhabitat.org/topic/housing>

Skill Development Activities Suggested

1. Exploring housing finance models.
2. Assessing Real Estate Markets.
3. Conduct market research and analysis for different habitat situations.

Course outcome (Course Skill Set)										
At the end of the course the student will be able to :										
Sl. No.	Description									Blooms Level
C01	To introduce the basic concepts related to housing									II
C02	To understand the significance of housing policies and housing finance									V
C03	To provide an insight into the different aspects of real estate market, planning and management									II
C04	To give an overview of different stakeholder involved in housing and real estate									IV
C05	To formulate good practices in real estate development									VI
Program Outcome of this course										
Sl. No.	Description									POs
1	Ability to understand Housing as a significant component of habitat									1,2,10
2	Understand the institutional mechanisms involved in Real Estate development									1,6,7,8,10
3	Comprehend the role of various stakeholders in Housing and Real Estate market									1,6,9,10
4	Develop skills to formulate Housing and Real estate projects									2,3,4,5,6,7,8,9, 10
Mapping of COS and POs										
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	2	-	-	1	-	2	2	1	-	2
C02	2	1	-	1	1	2	2	2	-	2
C03	2	1	-	1	2	2	2	2	-	2
C04	2	1	-	1	-	2	2	-	2	2
C05	1	2	3	2	3	2	2	2	1	2
Average	1.8	1	0.6	1.2	1.2	2	2	1.4	0.6	2
Graduate Attributes										
Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning	
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	
Mapping Co-relation	Low			Medium			High		No	
	1			2			3		-	

INFRASTRUCTURE PLANNING AND MANAGEMENT			
Course Code	24HDS26	CIE Marks	100
Teaching Hours/Week (L:P: SDA)	1:2:1	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives: <ul style="list-style-type: none"> To introduce and well verse the concepts, process, institution and setups behind the planning, development, and management of the infrastructure at different levels. To assess and forecast the urban infrastructure demands. To study infrastructure management systems in present and future directions. 			
Module-1			
CONCEPTS IN URBAN INFRASTRUCTURE PLANNING AND MANAGEMENT			
<ul style="list-style-type: none"> Types and characteristics of Infrastructure. Current Scenario and historical overview of Infrastructure Development nationally and internationally. Typical infrastructure planning steps. Planning and appraisal of major infrastructure projects; Screening of project ideas. Infrastructure Organizations and Systems. Governing Agencies and systems at National, State and Local levels. Infrastructure management-Significance, Techniques and stake holders. An overview of Urban Infrastructure in India. 			
Module-2			
MEASUREMENT AND FORECASTING OF INFRASTRUCTURE DEMANDS:			
<ul style="list-style-type: none"> Measurement and calculation on Infrastructure capacity, adequacy, quality: Their indicators and benchmarks. Qualitative and Quantitative techniques of assessing requirements. The factors influencing demand for infrastructure; Estimation and demand, forecasting principles and techniques. Review and application of Techniques, models for Servicing of Infrastructure demands; Scenario development. 			
Module-3			
ECONOMICS OF INFRASTRUCTURE DEVELOPMENT			
<ul style="list-style-type: none"> Models of Infrastructure Financing- Understanding through Case studies. Infrastructure Project Budgeting, Funding and Sources of Funding; Regulatory Framework. Development models and finance mechanisms. Evaluation of infrastructure investment at international communities. 			
Module-4			
INFRASTRUCTURE CONTRACT MANAGEMENT			
<ul style="list-style-type: none"> Tendering and Contractual Procedures; Public Bids and Private Bids. Understanding of preparation and submission of Contract, laws & Legal framework of Infrastructure project construction. Understanding laws pertaining to environment and pollution control clearances. 			
Module-5			
CHALLENGES IN INFRASTRUCTURE PLANNING			
<ul style="list-style-type: none"> Mapping and Mitigation of risks in Infrastructure projects; Economic and Demand Risks, Socio-Environmental Risks, Cultural Risks in International Infrastructure Projects. Legal and Contractual issues In Infrastructure at International borders, Challenges In Construction and Maintenance of Infrastructure. 			
Assessment Details: Methods of CIE need to be defined topic wise i.e.- Studio work, Seminar or micro-Project. The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.			
Continuous Internal Evaluation: <ol style="list-style-type: none"> Methods suggested: Submission of the studio work on regular basis in the form of drawings, models, reports of site/field trips etc. The course faculty must decide the topic for the studio work and other assignments bases on the design brief of Habitat Design Studio-II. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
Suggested Learning Resources: Books <ol style="list-style-type: none"> Herbert Girardet, (1996) "The GAIA Atlas of Cities", new edition, Gaia Books Ltd. C S Yadav, "Urban planning and Policies -Volume 16-A -Part A: Reorientation of Policy Norms", Concept Publishing Company. S. Kostoff. (1991), "The City Shaped. London", Thames and Hudson. Kevin Lynch, (1995) "City sense and city design", The MIT Press. P Leelakrishnan, (2016), Environmental Law in India, (4th Ed.). 			

6. Shyam Divan, (2001), "Environmental Law and Policy in India: Cases, Materials and Statutes." (2nd ed.), OUP India.
7. Goodman, Alvin S. and Makarand Hastak. Infrastructure Planning Handbook: 2006.
8. J. Parkin and D. Sharma, Infrastructure planning, Thomas Telford, London, 1999

Web links and Video Lectures (e-Resources):

1. https://onlinecourses.nptel.ac.in/noc22_hs64/preview
2. <https://archive.nptel.ac.in/courses/105/106/105106188/>
3. <https://nptel.ac.in/courses/105106115>
4. <https://archive.nptel.ac.in/courses/124/107/124107007/>

Skill Development Activities Suggested

1. Generate Tools for infrastructure evaluation in Urban Areas.
2. Audit systems for working of Urban management bodies.
3. Principles of Infrastructure case studies and Best Practices.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Understand the role of physical and social infrastructure in Habitat Development.	II
CO2	Understand roles, functions, and relationships between various parastatal and civic bodies in urban management.	IV
CO3	Understanding the institution, policy, finance systems and management of infrastructure	II

Program Outcome of this course

Sl. No.	Description	POs
1	Analyze and understand the role of infrastructure in Sustainable Habitat Design	1,2,7,8
2	Understand working of urban management bodies with respect to the site area.	1,3,9,10
3	Qualitative and quantitative Analysis of existing Urban Infrastructure and their shortcomings.	2,3,6,7,8,10

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	-	1	-	2	2	1	-	2
CO2	2	1	-	1	1	2	2	2	-	2
CO3	2	1	-	1	2	2	2	2	-	2
CO4	2	1	-	1	-	2	2	-	2	2
CO5	1	2	3	2	3	2	2	2	1	2
Average	1.8	1	0.6	1.2	1.2	2	2	1.4	0.6	2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co- relation	Low	Medium	High	No
	1	2	3	-

URBAN ECONOMICS			
Course Code	24HDE251	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning Objectives:			
<ul style="list-style-type: none"> ● To familiarize students with the fundamentals of Urban Economics and economic forces that defines urban habitat. ● To understand finance systems involved in Urban Habitat. 			
Module-1			
THEORIES OF URBAN ECONOMICS			
<ul style="list-style-type: none"> ● Laws of economics, Human needs and wants, Factors of production, Occupation sectors. Land Values ● Theory of Agglomerations, Land use theories, Bid Rent Theory. ● Economic principles of Urban Land uses, Urban location theory, different types of Location Models. 			
Module-2			
INDIAN ECONOMIC REFORMS			
<ul style="list-style-type: none"> ● Effects of Liberalization, Privatization, and Globalization. ● Globalization of Indian economy and its impact on Urban habitat. Global economy and its relation to Indian urban economy. ● Urbanization and Smart city mission, AMRUT and HRUDAY. 			
Module-3			
LAND ECONOMICS			
<ul style="list-style-type: none"> ● Urban Land Value. Urban land as an economic resource. ● Land Economics and Spatial Planning Mechanisms. Urban Land policy and its implications at various levels of decision making. ● Land taxation, Land bank and Planning Regulations. 			
Module-4			
ECONOMICS OF HOUSING MARKETS			
<ul style="list-style-type: none"> ● Urban Housing and Real Estate- Dynamics of Housing Stock, Housing Prices and Consumption patterns. Work-Home relationship. Land utilization costs, Capital cost, Building costs, Replicability and Feasibility. ● Urban Transportation- Trends and effects of urban transportation on urban structure. 			
Module-5			
FINANCE SYSTEMS			
<ul style="list-style-type: none"> ● Sources of Finance, Concepts of Capital, Revenue and Expenditure. ● Role of Public and Private sector in financing habitat interventions. Mortgages, Securitization in the real estate sector. ● FDI in Indian real estate and other global finance mechanisms. ● Types of Government Budget related to Urban infrastructure and development projects such as: City Centres, Transportation Corridors, Residential Neighbourhoods and Water Fronts. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> 1. Methods suggested: Submission of assignments on regular basis. 2. The course faculty has to decide the assignments and topics based on the modules. 3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
Suggested Learning Resources:			
Books			
<ol style="list-style-type: none"> 1. Jack Harvey, "Urban Land Economics", Palgrave Macmillan, 6th Edition, 2003. 2. Amitabh Kundu, "Urban land markets land price changes", Ashgate, 1997. 3. Evans, A, "Economics and land use planning", Blackwell, 2004. 4. Alain Bertaud, "Order without Design: How Markets Shape Cities", The MIT Press, 2018. 5. John F. McDonald, Daniel P. McMillen, "Urban Economics and Real Estate: Theory and Policy", John Wiley & Sons, 2010. 6. Prasanna K. Mohanty, "Planning and Economics of Cities: Shaping India's Form and Future", SAGE Publications India Pvt Ltd, 2018. 			

Web links and Video Lectures (e-Resources):

1. <https://www.youtube.com/watch?v=kV6XE1j30sk>
2. https://link.springer.com/chapter/10.1007/978-3-319-39812-9_2
3. <https://www.jstor.org/stable/2097629>
4. <https://www.jstor.org/stable/41107365>
5. <https://www.frontiersin.org/journals/sustainable-cities/sections/urban-economics>

Skill Development Activities Suggested

1. Read the habitat through its economic aspects
2. Spatial representation of implication of economic factors on human habitat.
3. Generate tools/frameworks to identify the relationship of economic factors with the other aspects of the habitat.
4. Comprehend the economics of housing markets and its implications.
5. Case studies of various urban economic issues.

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

Sl. No.	Description	Blooms Level
CO1	Comprehend the implication of economics on human habitat	II
CO2	Familiarise with the knowledge base in the discipline	I
CO3	Evaluate the economic value of land and its implication on the habitat form and structure	VI
CO4	Asses local and global economic impacts on the evolution of habitats	V
CO5	Integrate the layer of economics while addressing habitat issues	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Comprehending habitats in holistic perspective through its economic aspects	1, 2, 3, 6, 7, 8, 10
2	Generate an inter-relationship framework of economic aspects and other aspects in a habitat	1, 2, 3, 5, 6, 7, 8
3	Generate a responsive approach to habitat design in the context of economics of the habitat	2, 3, 4, 5, 6, 7, 8

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	1	-	2	2	2	1	2
CO2	3	2	1	-	-	-	1	1	-	1
CO3	2	3	3	3	1	-	1	1	2	1
CO4	3	3	2	1	-	1	1	1	-	2
CO5	2	2	3	2	2	1	1	1	1	2
Average	2.6	2.6	2.2	1.4	0.6	0.8	1.2	1.2	0.8	1.6

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

HERITAGE HABITAT: CONSERVATION AND RENEWAL			
Course Code	24HDE252	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To equip students with an understanding of heritage and the layers of historic urban precincts. To familiarize students with methodologies and roles of organizations guiding conservation and restoration policies, addressing design issues in urban heritage areas. To raise awareness of community involvement and the pivotal role of stakeholders in the conservation process. 			
Module-1			
INTRODUCTION - HISTORY AND HERITAGE			
<ul style="list-style-type: none"> Concepts of history, heritage and historical precincts. Various means of documenting and mapping these (Listing, Survey and mapping, Inventory, Measured Drawing and Condition Assessment). Heritage and Identity, need for preserving heritage. Threats to Heritage. Heritage and cities, Historic and Inner City Areas and other Natural elements. 			
Module-2			
THE PRINCIPLES AND PHILOSOPHY OF CONSERVATION – DIFFERENT PERSPECTIVES			
<ul style="list-style-type: none"> History of Conservation. To introduce to the various charters and development of UNESCO as the global agency and its role in the field of conservation. Current conservation practices: <ul style="list-style-type: none"> Urban recycling and brown field projects, urban renewal and development strategies for regeneration of inner-city areas. Best practices in Urban Conservation and Regeneration in India and other countries through case studies. 			
Module-3			
HERITAGE, CULTURE AND BUILT ENVIRONMENT			
<ul style="list-style-type: none"> Inter-cultural and cross-cultural communication – role of communities and indigenous groups. Understanding relationship between culture and globalization. <ul style="list-style-type: none"> Built heritage – approach and methods of conservation – concepts of reuse, restore, preserve, retrofit etc. Historical urban precincts-approach and methods of conservation-regeneration, revival, reimagine etc. 			
Module-4			
POLICIES, LAWS AND CHARTERS			
<ul style="list-style-type: none"> Institutional Aspects of Conservation - Charters - World Heritage legislation and Sites Conservation Acts. Legislation Archaeological Acts Institutional framework for conservation in India and other countries. Legislation frameworks and institutional frameworks for special areas, urban conservation, and urban recycling. Heritage economics/ implementation framework <ul style="list-style-type: none"> Financial and Implementation framework for urban conservation and Adaptive Reuse Projects. Conservation Management, community participation, economic regeneration, upgrading infrastructure, financing and implementation. Framework for redevelopment and revitalization projects. 			
Module-5			
HERITAGE MANAGEMENT			
<ul style="list-style-type: none"> Risk & Threat Preparedness-Heritage in the times of Conflicts and disasters. Best practices in Urban Conservation and Regeneration in India and other countries through case studies. Community Engagement and Participation. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> Methods suggested: Submission of assignments on regular basis. The course faculty has to decide the assignments and topics based on the modules. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			

Suggested Learning Resources:**Books**

1. UNESCO, HOI AN Protocols for Best Conservation Practices In Asia
2. Bernard Feilden, Jukka Jokilheto, Management Guidelines for World Cultural Heritage Sites
3. John McCarthy, Partnership, Collaborative Planning and Urban Regeneration
4. Nicholas Wise, Takamitsu Jimura, Tourism, Cultural Heritage and Urban Regeneration
5. Nathaniel Lichfield, "Economics in Urban Conservation", Cambridge University Press, 1988

Web links and Video Lectures (e-Resources):

1. https://onlinecourses.nptel.ac.in/noc21_bt21/preview
2. <https://archive.nptel.ac.in/courses/124/105/124105003/>
3. <https://www.youtube.com/watch?v=k83ZBHdxrI>
4. <https://www.youtube.com/watch?v=ZXPiMZOl-aw>

Skill Development Activities Suggested

1. Detailed Documentation of selected Urban Heritage Precincts.
2. Study of best practices in Urban Heritage management.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Understand various concepts of History, Heritage and Habitats	I, II
CO2	Comprehend various methods of conservation and their application.	IV, V
CO3	Understand role of Conservation in Urban renewal and Economy generation	II,IV
CO4	Comprehend the various policies and charters for heritage conservation	III,IV,V
CO5	Understand management of urban heritage precincts	V,VI

Program Outcome of this course

Sl. No.	Description	POs
1.	Capacity to analyse and understand complex built and urban environments in historic setting	1,2,3,6,10
2.	Familiarise with Legal, Financial and Implementation framework for Urban Conservation and role of community participation	1,3,6,7,8,10
3.	Application of current conservation practices as part of Habitat Design studio	2,3,4,7,8,10

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	2	-	-	2	-	2	-	3
CO2	3	3	3	-	-	1	2	2	-	3
CO3	2	1	2	-	2	2	2	2	-	2
CO4	2	2	-	-	1	2	2	3	3	2
CO5	3	1	2	3	1	2	2	3	3	2
AVERAGE	2.6	1.6	1.8	0.6	0.8	1.8	1.6	2.4	1.2	2.4

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

SUSTAINABLE URBAN PRACTICES			
Course Code	24HDE253	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To familiarize students with sustainable design practices in habitat systems. To understand Integrated Interdisciplinary Perspectives in holistic development. 			
MODULE 1			
INTRODUCTION TO SUSTAINABLE DEVELOPMENT			
<ul style="list-style-type: none"> SDGs and its relevance to cities, Environmental, Economic and Social Sustainability. City as an Ecosystem: Sustainable Land use and sustainable communities, Ecological design, and ecological indices. Sustainable energy consumption: Optimization of energy usage, renewable energy, clean energy, innovative usage of alternative energy, sustainable waste management. 			
MODULE 2			
INTERNATIONAL POLICIES AND FRAMEWORKS			
<ul style="list-style-type: none"> Implementation of policies in Indian context. Social Equity and Community Engagement. Innovative public-private partnerships for a social innovation in the transition to low carbon-energy. 			
MODULE 3			
INNOVATIVE WATER MANAGEMENT SYSTEMS			
<ul style="list-style-type: none"> Water resilience, traditional water harvesting and conservation techniques, water augmentation and sustainable storm water Management systems, Wastewater recycling. 			
MODULE 4			
URBAN BIODIVERSITY AND GREEN SPACE PLANNING			
<ul style="list-style-type: none"> Conservation of ecosystems, green networks, productive urban landscapes. Ecological approaches to Urban Development. Sustainable design practices. 			
MODULE 5			
SUSTAINABLE TRANSPORTATION SYSTEM			
<ul style="list-style-type: none"> Transit oriented development, green infrastructure, and green linear systems. Study of best practices adopted by cities across the world. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> Methods suggested: Submission of assignments on regular basis. The course faculty has to decide the assignments and topics based on the modules. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
Suggested Learning Resources:			
Books			
<ol style="list-style-type: none"> Forster O. Ndubisi, The Ecological Design and Planning Reader, Island Press, 2014 Joy Sen, Sustainable Urban Planning, Teri Press; 2013 Ronald A Altoon and James C Auld, Urban transformation transit-oriented development and the sustainable city, Image Publishing; 2011 Steeff Buijs, Others ed, Megacities Exploring a Sustainable Future, OIO Publishers; 2010 Douglas Farr, Sustainable Urbanism: Urban Design with Nature, Marg Publication, 2007 Cedric Pugh, Sustainable Cities in Developing Countries, Earthscan Publications Ltd. ;2005 Robrt Riddell, Sustainable Urban Planning Tipping the Balance, Blackwell Publishing; 2004 Dominique Gauzin-Muller, Sustainable Architecture and Urbanism, Birkhauser Publishers for Architecture; 2002 John Kirkby, & Phil O'Keefe, Sustainable Development, EarthScan Publications Ltd.; 1999 Martin Purvis, & Alan Grainger, Exploring Sustainable Development Geographical Perspectives, EarthScan Publications Ltd.; 2005 			

Web links and Video Lectures (e-Resources):

1. <https://www.youtube.com/watch?v=e6tNPLowkF8>
2. <https://www.youtube.com/watch?v=yGcK72SKZk>
3. <https://www.youtube.com/watch?v=Sc--bCvPM1k>
4. https://www.youtube.com/watch?v=nYM_oPFjF7w
5. https://www.youtube.com/watch?v=5gqRn_yzA4k

Skill Development Activities Suggested

1. Interpreting SDGs to integrate in prospects of development.
2. To comprehend the various drivers of sustainable development.
3. To understand the importance and impacts of international policies on decision making & development.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Evaluating innovative sustainable practices in habitat systems	IV
C02	Comprehend the important drivers for sustainable practices to be integrated in the development of habitats.	V
C03	Evaluate environmental management strategies and participatory method in sustainable urban development strategies.	IV

Program Outcome of this course

Sl. No.	Description	POs
1	Ability to assess the significance of interdisciplinary collaboration in development decisions	1, 2,6,7,8, 9, 10
2	Ability to understand the relationship between environmental systems and habitats.	1,2,3,6,7,8,10
3	Holistic approach to habitat resource management	1, 2,6,7,8, 9, 10
4	Knowledge of sustainable practices in human habitat systems	1, 2,6,7,8, 9, 10

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	3	1	2	1	3	3	3	3	3
C02	3	3	3	2	1	3	3	3	3	3
C03	3	3	3	2	3	3	3	3	3	3
C04	3	3	3	2	3	3	3	3	3	3
Average	3	3	2.5	1.6	2	3	3	3	3	3

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

DISASTER MANAGEMENT			
Course Code	24HDE254	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
<p>Course Learning objectives:</p> <ul style="list-style-type: none"> To understand the importance of Disaster Risk Mitigation, Reduction and Vulnerability within habitat systems. To understand the role of urban planning, environmental considerations, and infrastructure development in mitigating the impact of disasters on urban communities. 			
MODULE 1			
<p>Overview of Disaster Management:</p> <ul style="list-style-type: none"> Introduction to Natural and Man-made Disasters. Conceptual Framework for Disaster Management. Identifying hazards and vulnerabilities in urban areas to understand disaster risks. 			
MODULE 2			
<p>Urban Disaster Impact and Mitigation:</p> <ul style="list-style-type: none"> Role of Urban Planning in Disaster Risk Reduction. Environmental Impacts of Urban Risks. Forecasting Disasters in Urban Areas. Vulnerability Mapping and Assessment Techniques. 			
MODULE 3			
<p>Risk Identification, Assessment and Mitigation Strategies:</p> <ul style="list-style-type: none"> Mitigation Framework for Urban Risk Reduction. Techniques for Risk Identification, Assessment and Vulnerability Analysis in Urban Areas. Principles of effective risk communication during pre-disaster, disaster and post-disaster phases. 			
MODULE 4			
<p>Policies, Frameworks and Community Participation:</p> <ul style="list-style-type: none"> Urban Development Policies and Governance. Introduction to National Building Codes for Risk Management. Introduction to Policies and Frameworks for Urban Risk Management. Importance of Community Participation in Risk Management. 			
MODULE 5			
<p>Technology and Agencies in Disaster Management:</p> <ul style="list-style-type: none"> Use of Technology in Disaster Mitigation and Management, such as Drones, AI and GIS in Disaster Response Role of Various Agencies such as NDMA, NIUA, SIUD, etc., in Urban Disaster Management. Analysis of National and International Case Studies in Urban Disaster Management. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> Methods suggested: Submission of assignments on regular basis. The course faculty has to decide the assignments and topics based on the modules. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			

Suggested Learning Resources:										
Books										
1. Satsangi, A. (2017). Disaster Management and Environmental Education. Book Enclave Publication.										
2. Coenraads, R. (2012). Natural Disasters and How We Cope. Millennium House.										
3. Sener, S.M., C.A. Brebbia& O. Ozcevik. Disaster Management & Human Health Risk IV, 2015.										
4. Osti, Rabindra, and K. Miyake. Forms of Community Participation in Disaster Risk Management Practices. New York: Nova Science Publishers, 2011.										
5. Singh, Jagbir. Biodiversity Environment & Sustainability, New Delhi: M D Publications Pvt. Ltd, 2008.										
Web links and Video Lectures (e-Resources):										
1. https://ssp.nidm.gov.in/enrol/index.php?id=148										
2. https://dmc.engr.wisc.edu/self-study-courses/										
3. https://nptel.ac.in/courses/105104183										
4. https://archive.nptel.ac.in/courses/105/104/105104183/										
5. https://onlinecourses.nptel.ac.in/noc19_ar12/preview										
6. https://www.my-mooc.com/en/mooc/disaster-management/										
Skill Development Activities Suggested										
1. Assessing policies aimed at fostering disaster-resilient development.										
2. Case Studies- To examine and access regions prone to disasters with a critical lens.										
3. Strategy Formulation to mitigate urban disasters effectively.										
Course outcome (Course Skill Set)										
At the end of the course the student will be able to:										
Sl. No.	Description									Blooms Level
C01	Awareness of disaster management protocols and information.									I
C02	Understanding fundamentals of disaster management									II
C03	Analysing Urban Disaster Impact and Mitigation									IV
C04	Understanding the utilization of technology and agencies involved in risk management									IV
C05	Formulating Action plan along with strategies, for mitigating urban disasters									V
C06	Creation of framework for building resilient cities									VI
Program Outcome of this course										
Sl. No.	Description									POs
1	Understand disaster management as a crucial tool in urban disaster mitigation.									1,2,6,7,10
2	Promoting awareness for fostering growth that is resilient to disasters									2,3,4,7,8,10
3	Developing strategies to mitigate urban disasters.									3,4,5,6,7,8
Mapping of COS and POs										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	1	-	1	1	-	1	2	3	3
C02	3	1	-	1	-	-	1	3	2	3
C03	2	3	3	2	2	1	3	3	1	3
C04	2	1	1	3	-	-	1	2	-	3
C05	1	2	3	2	3	2	3	3	1	3
C06	2	2	3	3	2	1	2	2	3	3
Average	2.2	1.6	2.5	2	2	1.3	1.9	2.5	2	3
Graduate Attributes										
Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning	
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
Mapping Co-relation	Low			Medium			High		No	
	1			2			3		-	

Semester- III

HABITAT DESIGN STUDIO-III (NEW EXTENSIONS TO EXISTING CITY)			
Course Code	24HDC31	CIE Marks	50
Teaching Hours/Week (L:P: SDA)	2:6:1	SEE Marks	50
Total Hours of Pedagogy	8	Total Marks	100
Credits	8	Exam Hours	-
<p>Course Learning objectives:</p> <ul style="list-style-type: none"> • Studio intent is to sensitize students to dynamics of conceiving and implementing new urban development. 			
<p>Studio Outline</p> <p>The project involves a new development/extension to an existing city.</p> <ul style="list-style-type: none"> • A realistic project to be identified with specific client (Real or Imaginary) requirement. • The project should involve large site area, population, and complexity of functions. • Geographical settings and siting, Assessment of site resources- Analysis through Ecological theories and processes. Study of Geomorphology, Physiography, Geology, Hydrology, Vegetation and Wildlife. • Study of existing settlements in the influence area, importance of Social Impact Assessment. • Documenting Cultural resources, Heritage Districts and Monuments. • Urban open space systems, green networks. • Infrastructure Assessment and planning- Road Networks, Site Grading and Drainage, Sewerage, Water Supply and Electricity. • Legal aspects of land ownership, Planning and Development tools. • Stakeholder engagement. • Development Strategy- Funding, Cost Recovery Systems, Project formulation, Phasing and Infrastructure Development. <p>Project should conclude in a detailed master plan demonstration. Site Study to be carried out in groups and interventions to be submitted individually.</p> <p>Integrated Studio Course (ISC) Urban Governance:</p> <ol style="list-style-type: none"> 1. Concepts of urban governance, overlapping of territory, various stakeholders, and their role in the city. 2. Infrastructure and finance aspects of local administration. 			
<p>Assessment Details (both CIE and SEE) For Professional Studio Core Course Integrated with the theories/software relating to the studio. The theory part of the ISC shall be evaluated by CIE with regular assignment. The studio part shall be evaluated by both CIE & SEE (Viva-Voce with the external examiner). The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p> <p>Continuous Internal Evaluation: Continuous Internal Evaluation will be based on</p> <ol style="list-style-type: none"> 1. Seminars, Assignments, and Studio Discussions for ISC component. 2. Two Internal Reviews, two External Reviews and Final Portfolio Submission for Studio component. <p>Semester End Examination: Viva-voce: The viva voce shall be conducted in two phases, firstly for the group work followed by Viva Voce for individual interventions. Weightage ratio of 80:20.</p>			
<p>Suggested Learning Resources:</p> <p>Books</p> <ol style="list-style-type: none"> 1. C.A. Doxiadis, "Ekistics", Oxford University Press, 1st edition, 1968. 2. Le Corbusier, "Towards a new Architecture", Martino Fine Books, 2014. 3. David Bell & Mark Jayne, "Small Cities - Urban Experience beyond the Metropolis", Routledge, 1st Edition, 2006. 4. Peter Bosselmann, "Representation of Places - Reality and Realism in City Design", University of California Press, 1998. 5. Cecilia Tacoli-, "Rural Urban Linkages", Routledge; 1st Edition, 1996. 6. Christa van Santen, "Light Zone City - Light Planning in the Urban Context", Birkhauser, 1st Edition, 2006. 7. Givoni B, "Climate and Urban Design", New Age International Private Limited; 2nd Edition, 2012. 8. Ian McHarg, "Design with Nature", John Wiley & Sons, 1995. 9. Geoffrey Broadbent, "Emerging concepts in Urban Space Design", Taylor & Francis, 1st Edition, 1995. 			

Web links and Video Lectures (e-Resources):

1. https://unhabitat.org/sites/default/files/2020/10/wcr_2020_report.pdf
2. <https://www.worldbank.org/en/topic/urbandevelopment/overview>
3. <https://transportgeography.org/contents/chapter8/urban-land-use-transportation/urban-expansion/>
4. <https://doi.org/10.1016/j.apm.2016.08.002>
5. <https://www.wri.org/insights/world-resources-report-towards-more-equal-city-framing-opportunities-and-challenges>

Skill Development Activities Suggested

1. Mapping and evaluation techniques for extension of settlements/ new settlements.
2. Method/ Technique of Social Impact Assessment.
3. Formulating Development Guidelines.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	To assess conditions to site new habitats & augment infrastructure	V
C02	Generate Masterplan and Development guidelines for the new habitat	V
C03	Develop humane habitats through sensitive design approaches	VI
C04	Devise implementation mechanism for proposed new development	VI
C05	Evaluate the impact of development	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Ability to assess and augment extension of settlement fabric	2, 3, 4, 6, 7, 8
2	Evolve new habitat systems	2, 3, 4, 5, 6, 7, 8
3	Generate project implementation mechanism	3, 5, 9, 10
4	Ability to assess implication of new settlements	2, 3, 6, 7, 8

Mapping of COs and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	2	3	3	2	-	-	2	2	3	2
C02	2	2	2	2	3	1	1	1	1	1
C03	2	3	2	3	3	2	2	2	1	1
C04	2	2	2	2	3	2	2	2	2	2
C05	1	3	1	2	3	2	3	3	2	2
Average	1.8	2.6	2.4	2.2	2.4	1.4	2	2.4	1.8	1.6

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

DISSERTATION PHASE 1			
Course Code	24HDS32	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	0:3:1	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
<p>Course Learning objectives:</p> <ul style="list-style-type: none"> The course aims to conduct research exploration focused on a specific theme or topic related to Habitat Design, with the objective of guiding the progression towards the Dissertation project. 			
<p>Course outline</p> <p>To initiate students into the dissertation process, emphasizing the creation of an Individual Project focused on the Habitat Design theme. Students will select a research topic, formulate research questions and commence a thorough investigation.</p> <p>Students to develop their research based on the research components:</p> <ol style="list-style-type: none"> Research Problem: Defining the central issue and aims of the research. Research Objectives: Establishing specific goals that the research endeavours to accomplish. Literature Review: A systematic review of existing literature relevant to the research problem. To establish a theoretical framework, identify gaps in previous research and provide justification for the new study. Case Studies: Examining real-life instances to supplement research findings and provide contextual insights. Hypotheses: Developing predictive statements suggesting relationships between variables, guided by theoretical insights or observations. Research Methodology Formulation: Creating a structured approach for conducting the research, encompassing data collection and analysis methods. User Groups and Stakeholders Identification: Identifying individuals or entities with a vested interest in or impacted by the research outcomes. Study Site/Area Selection: Identifying relevant locations pertinent to the chosen theme or topic for research investigation. Secondary Data Collection : Gathering and scrutinizing data to derive insights and draw conclusions in line with the research objectives. Report Formulation. <p>NOTE:</p> <ul style="list-style-type: none"> Two seminars to be given by each student. Student shall submit a concise report on the selected topic of study along with detailed synopsis of the project selected for Dissertation. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> Methods suggested: Submission of assignments, studio discussion, reviews and seminars on regular basis. The course faculty has to decide the assignments and topics based on their respective research topics. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
<p>Suggested Learning Resources:</p> <p>Books</p> <ol style="list-style-type: none"> 'Doing your Master's Dissertation' by Chris Hart 'Visual Research Methods in Design' by Sanoff H 'Research Design in Urban Planning: A Student's Guide' by Stuart Farthing 'Doing Research in Urban and Regional Planning' by Diana MacCallum, Courtney Babb & Carey Curtis 'Design Research for Urban Landscapes-Theories and Methods' by Martin Prominski & Hille Seggern 'Architectural Research Methods' by Linda Groat & David Wang 			

Web links and Video Lectures (e-Resources):

1. https://swayam.gov.in/nc_details/NPTEL
2. <https://dmc.engr.wisc.edu/self-study-courses/>
3. <https://www.coursera.org/search?query=urban%20planning>
4. <https://www.library.illinois.edu/cpla/theses/mturp/>
5. <http://shodhbhagirathi.iitr.ac.in:8081/jspui/handle/123456789/108>

Skill Development Activities Suggested

1. Formulating research questions and developing hypotheses.
2. Data collection methods and ethical considerations.
3. Literature Review methods and synthesizing findings.
4. Technical writing and presentation seminars.

Course outcome (Course Skill Set)
At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Recall foundational principles and theories relevant to habitat design	I
C02	Interpret and summarize existing literature, theoretical frameworks and case studies in habitat design	II
C03	Utilizing design principles and techniques to develop innovative habitat design proposals	III
C04	Analyse and critique existing habitat designs, identifying strengths, weaknesses and opportunities for improvement	IV
C05	Assess the effectiveness of habitat design solutions in addressing aims and objectives	V
C06	Creation of framework for the identified theme/topic to progress into Dissertation-II Project	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Identify aspects of human habitat which require critical investigation.	1,2,6,7,10
2	Comprehensive understanding of relationship between habitat components.	2,3,4,7,8,10
3	Formulating systematic approach to investigate habitat related issues.	3,4,5,6,7,8
4	Acquire the research and methodological skills required to conduct independent investigations effectively.	2,3,4,5,7,8,10

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	1	-	-	-	1	1	1	2	3
C02	2	3	3	2	2	2	3	3	1	3
C03	2	3	3	3	3	2	3	3	-	3
C04	2	3	2	1	-	-	3	2	-	3
C05	2	3	3	1	-	1	1	1	-	2
C06	3	3	3	2	2	2	2	2	-	3
Average	2.3	2.7	2.8	1.8	2.3	1.6	2.2	2	1.5	2.8

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

INDUSTRY INTERNSHIP

Course Code	24INT35	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	-	SEE Marks	50
Total Hours of Pedagogy	-	Total Marks	100
Credits	7	Exam Hours	-

Course Learning objectives:

- To acquire hands-on experience and insight into various facets of professional practice within the industry.
- To apply theoretical knowledge acquired through academic coursework to real-world professional settings within the industry.

Course Outline:

Students are expected to work in firms handling projects of following nature:

1. Urban Infill Projects.
2. Urban Brown Field Projects.
3. Revitalization projects of neglected or deteriorating parts of city.
4. Development of Settlement Master plan.
5. Heritage Habitat Preservation and Conservation.
6. Waterfront Redevelopment Project.
7. Smart City Initiatives.
8. Disaster Resilience Planning.
9. Public Realm Planning.
10. Large scale Housing projects.
11. Transportation and mobility related projects.
12. Formulation of guidelines for urban design projects.
13. Large-scale endeavours such as Layout Designs, Housing Complexes, Mixed-Use Developments, Campus Master Plans that encompass multiple structures and Site Planning.

The student is expected to acquaint themselves in the design decision making process concerning urban issues and parameters in the design process.

The student is expected to familiarize themselves with the following:

- a) Administration of office
- b) Soliciting and obtaining projects
- c) Client meetings
- d) Site visits
- e) Drawings and detailing
- f) Design process and presentation.
- g) Stake-holder engagement

For the viva-voce exam, the following need to be presented by the student:

- a) Statement indicating the various types of works completed by the student in the firm.
- b) Daily log maintained by the student.
- c) Drawings/ Reports of projects on which the student has worked.
- d) Photographs of project sites.
- e) Any other material in support of student's involvement in the work.

Internship duration of **Three months** (12 weeks) of industry internship. This includes 8 weeks during the vacation following the end of 2nd semester and 4 weeks of internship from the commencement of 3rd semester.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

Continuous Internal Evaluation will be based on daily log, reports, drawings and Final Portfolio Submission.

Semester End Examination:

Viva-voce: The viva voce shall be conducted for a duration of 20 minutes (per student)

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Recall terminology, principles and concepts learned in academic coursework	I
C02	Understand the theoretical foundations, functions and operations of industry	II
C03	Apply theoretical knowledge to practicality and projects	III
C04	Assess the impact of external factors, market trends, ground realities and monitoring changes on industry operations	IV
C05	Critique the industry-related policies, initiatives, strategies and solutions	V
C06	Generate inventive design solutions that surpass conventional norms and contribute to the advancement of practice	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Practical experience in industry through hands-on involvement in real-world projects.	2,4,5,6,7,8,9,10
2	Exposure to various aspects of practice, including project management, client communication and collaboration with multidisciplinary teams.	1,2,6,9,10
3	Insight into the professional standards, ethical considerations and regulatory requirements	1,2,6,7,8,10
4	Enhanced readiness for careers in the field by acquiring practical skills	2,3,4,5,6

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	-	-	-	-	2	2	2	-	-
C02	3	3	-	-	-	2	-	-	2	3
C03	3	3	3	3	3	2	2	2	1	3
C04	2	3	1	1	-	2	3	3	3	3
C05	2	3	-	-	-	3	1	1	1	3
C06	2	2	3	3	3	2	2	2	3	3
Average	2.5	2.8	2.3	2.3	3	2.2	2	2	2	3

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

LANDSCAPE AND ECOLOGY IN HABITAT SYSTEMS			
Course Code	24HDE331	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> • Role of landscape in evolution of habitat systems. • Comprehend approaches to evolve sustainable habitats and realise impact of development on environment. • Understand the role of ecosystem services in habitat systems. 			
MODULE 1			
INTRODUCTION TO LANDSCAPE AND LANDSCAPE DYNAMICS			
<ul style="list-style-type: none"> • Elements of Landscape and their integration in urban habitat systems. • Changing landscapes in urban and rural realms. • Relation between Landscape and ecological systems. • Landscape and urban form: Past, present, and future. 			
MODULE 2			
CONCEPTS AND PRICIPLES OF ECOLOGY			
<ul style="list-style-type: none"> • Concepts of settlement ecology- Overview of ecological principles, Nature as the primary layer in the development process. • Ecosystem Services and integration in urban habitat systems. • Threats to Ecosystem and habitats. 			
MODULE 3			
HUMAN HABITAT, PUBLIC HEALTH, AND THE ENVIRONMENT			
<ul style="list-style-type: none"> • Introduction to habitat systems, Cities as centres of consumption of land, water, energy resources and forest cover. • Formal and Informal Settlements: Dependencies on Ecological systems, challenges, and issues. 			
MODULE 4			
ECOLOGICAL FOOTPRINT:			
<ul style="list-style-type: none"> • Land capacity, impact of development on ecosystem related to energy and resource depletion. • Urban Metabolism-Preliminary Concepts: Linear to Circular. 			
MODULE 5			
PRACTICES IN PROTECTION AND CONSERVATION OF LANDSCAPE IN URBAN HABITATS			
<ul style="list-style-type: none"> • Mitigation and adaptation towards Climate Crisis in cities. • Integrating Disaster Management and building resilience through participatory and inclusive methods. • Understanding Green Infrastructure network and its implications through case studies. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> 1. Methods suggested: Submission of assignments on regular basis. 2. The course faculty has to decide the assignments and topics based on the modules. 3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			
Suggested Learning Resources:			
Books			
<ol style="list-style-type: none"> 1. Molles, M. C. (2015). Ecology: Concepts and Applications (7th ed.). McGraw-Hill Education. 2. McHarg, I. L. (1995). Design with Nature. Wiley. 3. Dramstad, W. E., Olson, J. D., & Forman, R. T. T. (1996). Landscape Ecology Principles in Landscape Architecture and Land-Use Planning. Island Press. 4. Srivastav, A., & Srivastav, S. (2004). Ecological Meltdown: Impact of Unsustainable Human Activities on the Environment. APH Publishing Corporation. 5. Saxena, H. M., & Khan, M. Z. A. (2012). Urbanization, Environmental Degradation & Quality of Life. Rawat Publications. 6. Fraker, H. (2013). The Hidden Potential of Sustainable Neighborhoods: Lessons from Low-Carbon Communities. Island Press. 			

7. Gupta, A., & Asher, M. G. (1998). Environment & the Developing World: Principles, Policies & Management. Wiley.
8. Bicknell, J., Dodman, D., & Satterthwaite, D. (Eds.). (2009). Adapting Cities to Climate Change: Understanding and Addressing the Development Challenges. Earthscan. Designing Greenways: Sustainable Landscapes for Nature and People, Second Edition by Paul Cawood Hellmund and Daniel Smith.

Web links and Video Lectures (e-Resources):

1. <https://nptel.ac.in/courses/127106004>
2. <https://www.youtube.com/watch?v=lAvsymBnwug>
3. <https://www.youtube.com/watch?v=Ay4GmV8FOmA>
4. <https://www.youtube.com/watch?v=6h0dpQmCRmE>
5. <https://www.youtube.com/watch?v=aWPghGzsjOA>

Skill Development Activities Suggested

1. Reading and interpreting EIA reports
2. Understanding provisions in legal frameworks regarding environmental rights through study of judicial cases related to environment.
3. Analyse case studies and real-world examples of successful conservation efforts, considering both biological and socio-economic factors.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
C01	Analyse the role of Landscape elements in the urban habitats	IV
C02	Analyse the ecological impacts due to human interventions & importance of circular systems	IV
C03	Interpret various ecological layers in each site to propose informed solutions	V
C04	Evaluate environmental management strategies and participatory method	IV

Program Outcome of this course

Sl. No.	Description	POs
1	Ability to assess the significance of ecological layer in defining the nature of habitat	2,3,4,6,7,8
2	Ability to understand the relationship between environmental systems and liveability	1,2,3,6,7,8,10
3	Assess climate change challenges in eco-systems and habitats and evaluate suitable responses	1,2,3,4,5,6,7,10
4	Assess the role of ecosystem services in habitat systems.	1,3,6,8,9,10

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	3	2	2	1	3	2	3	3	3
C02	3	3	2	2	1	3	2	3	3	3
C03	3	3	2	1	3	3	2	3	3	3
C04	3	3	2	2	3	3	3	3	3	3
Average	3	3	2	1.75	2	3	2.25	3	3	3

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

ENVIRONMENTAL PLANNING SYSTEMS			
Course Code	24HDE332	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To Understand fundamentals of environmental planning and integration of environmental sustainability into habitats through policy, planning, and management of environmental systems. 			
Module-1			
INTRODUCTION TO URBAN CLIMATE			
<ul style="list-style-type: none"> Introduction to Urban climate and heat island. Soils, plant communities, ecosystem, ecology, and succession. 			
Module-2			
URBAN FORESTRY			
<ul style="list-style-type: none"> Urban Forestry, agriculture, and urban greening, green infrastructure and smart cities. Landscape ecology, Habitat Conservation Planning. Endangered Species Act, Biodiversity conservation. Ecosystem planning processes. 			
Module-3			
WATER MANAGEMENT			
<ul style="list-style-type: none"> Fundamentals of surface and groundwater hydrology. Integrating water and planning, such as stormwater management, source water/ groundwater protection, residential water conservation, water supply management. Water pollution control, and Clean Water Act compliance. 			
Module-4			
URBAN ENVIRONMENTAL PLANNING			
<ul style="list-style-type: none"> Challenges of urbanization, Sustainable urban development, Environmental Concepts – Sustainability and Environmental Carrying Capacity. Strategies in Land use, Transportation. Infrastructure Planning and Management - Generation and Evaluation of Alternatives -Decision Methods- Mitigation and Environmental Management Plan 			
Module-5			
ENVIRONMENTAL SYSTEMS AND ENVIRONMENTAL IMPACT ASSESSMENT			
<ul style="list-style-type: none"> Key concepts and terminology for understanding environmental systems. Scientific fundamentals needed to understand professional documents, legal requirements, and planning best practices. Introduction to EIAs, Purpose and Importance of EIAs, Key Components of EIAs, Legislation and Policy Framework 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> Methods suggested: Submission of assignments on regular basis. The course faculty has to decide the assignments and topics based on the modules. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			

Suggested Learning Resources:										
Books										
1. John Randolph. 2012. Environmental Land Use Planning and Management, Second Edition.										
2. Merchant, Carolyn. 1994. Ecology: Key Concepts in Critical Theory, Humanities Press, New Jersey.										
3. Bicker, Alan, Paul Sillitoe and Johan Pottier. 2004. Development and Local Knowledge: New Approaches to Issues in Natural Resources Management, Conservation and Agriculture. Routledge, London & New York.										
Web links and Video Lectures (e-Resources):										
1. https://archive.nptel.ac.in/courses/120/108/120108004/										
2. https://onlinecourses.nptel.ac.in/noc21_hs83/preview										
3. https://onlinecourses.nptel.ac.in/noc21_ge16/preview										
4. https://archive.nptel.ac.in/courses/127/105/127105018/										
Skill Development Activities Suggested										
1. Evaluate policies & legal framework for environmental management.										
2. Mapping of blue -green network in an urban environment.										
3. Strategy Formulation for urban disaster mitigation.										
Course outcome (Course Skill Set)										
At the end of the course the student will be able to:										
Sl. No.	Description									Blooms Level
C01	Understanding key laws and regulations that regulate urban environmental management									III
C02	Analysing how to apply scientific principles to plan and review process									IV
C03	Understanding professional domains that work in urban environmental planning									V
C04	Understanding environmental Impact Assessment									V
Program Outcome of this course										
Sl. No.	Description									POs
1	Integration of environmental sustainability into habitats from the perspective of environmental planning, and management									1, 2, 6, 7,10
2	Acquire data skills to be able to environmentally characterize sites.									1,2, 6,7, 8,10
Mapping of COS and POs										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	1	-	1	-	2	2	1	1	3
C02	2	3	2	1	1	2	2	-	-	3
C03	3	1	2	1	2	2	2	2	1	3
Average	2.6	1.6	1.3	1	1.2	2	2	1	1.2	3
Graduate Attributes										
Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning	
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	
Mapping Co- relation	Low		Medium			High		No		
	1		2			3		-		

STRATEGY MANAGEMENT AND IMPLEMENTATION PROJECTS			
Course Code	22HDE333	CIE Marks	100
Teaching Hours/Week (L: P: SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To aid the student in development of strategic vision, setting out objectives, formulating and implementing strategies. 			
Module-1			
Concepts of Strategic Planning:			
<ul style="list-style-type: none"> Principles, techniques, and study of various models in strategy management. Concepts, value of vision, mission and corporate objectives, the role of corporate governance and stakeholder management, coherence in strategic direction. Design Perspective- Tactical planning, Deployment of resources. Arriving at goals and metrics. 			
Module-2			
History and Theory of strategic planning:			
<ul style="list-style-type: none"> Understanding the classic theories and frameworks involved in the project. Understand different options of implementation plan through case studies and best practices. Principles, techniques, and study of various models. 			
Module-3			
Policy Perspective- policies, program, and rules.			
<ul style="list-style-type: none"> Role and significance of strategies in Urban project planning and development. Principles behind arriving at goals and metrics. 			
Module-4			
Risks and mitigation methods:			
<ul style="list-style-type: none"> Exploring the risks and other resistance for the project and ways to address them. Measures to stay informed and respond to trends in competition and technology while not losing sight of the strategic objective. Deployment of Technological assistance in strategic application. 			
Module-5			
Strategic evaluation of the project- Analysis and assessment.			
<ul style="list-style-type: none"> Strategic evaluation of the project- Analysis and assessment Design Perspective- Tactical planning, Deployment of resources. Understand the gap in implementation. Phasing and scenario planning for implementation modules. Players and mechanisms in urban project planning; Organizational chart. Financial strategies in Urban project developments. 			
Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work)			
The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.)			
The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.			
Continuous Internal Evaluation:			
1. Methods suggested: Submission of assignments on regular basis.			
2. The course faculty has to decide the assignments and topics based on the modules.			
3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal.			

Suggested Learning Resources:**Books**

1. Michael Ball, Colin Lizieri, Bryan D. Macgregor, "The Economics of Commercial Property Markets", Routledge, 1st Edition, 1998.
2. Adrienne Schmitz, Deborah L Brett, "Real Estate Market Analysis: A Case Study Approach", Urban Land institute, 2nd Edition, 2001.
3. Mike E. Miles, Laurence M. Netherton, Adrienne Schmitz, "Real Estate Development: Principles and Process", Urban land institute, 5th Edition, 2015.
4. Prashant Das and Divyanshu Sharma, "Real Estate Finance in India", Sage Publications, 2013.
5. CA Madhukar Hiregang, CA Virender Chauhan, CA Sudhir V S and CA Roopa Nayak, "A Practical Guide to GST on Real Estate Industry", Bloomsbury, 2019. Daniel Halpin and Ronald Woodhead, "Construction Management", Wiley, 2nd Edition, 1997.
6. Krishnamurthy and S.V.Ravindra, "Construction Management", CBS Publishers & Distributors Pvt. Ltd, 2nd Edition, 2017.
Prasanna Chandra, "Projects Planning, Analysis, Selection, Financing, Implementation and Review", McGraw-Hill, 8th Edition, 2017.
8. L S Srinath, "PERT and CPR-Principles and Application", Affiliated East-West Press, 2001.
9. Harold Kerzner, "Project Management", Wiley, New York, 2003.
10. Chitkara, "Construction Project Management", Tata McGraw- Hill, New Delhi.

Kamaraju Ramakrishna, "Essentials of Project Management", PHI Learning, New Delhi, 2010.

Web links and Video Lectures (e-Resources):

1. <https://archive.nptel.ac.in/courses/122/105/122105024/>
2. <https://archive.nptel.ac.in/courses/110/108/110108047/>
3. https://onlinecourses.nptel.ac.in/noc22_mg89/preview
4. <https://pll.harvard.edu/course/business-strategy-evaluating-and-executing-strategic-plan>
5. <https://www.coursera.org/learn/strategic-management>

Skill Development Activities Suggested

1. Understanding the concept of corporate governance.
2. Understanding implementation plan through case studies and best practices.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Comprehend basic concepts of Strategy management.	III
CO2	Critically evaluate implementation plan of urban development projects.	V
CO3	Explore the classic theories and frameworks involved in the project.	VI

Program Outcome of this course

Sl. No.	Description	POs
1	Knowledge of best practices in strategy management	1, 2, 6, 7,10
2	Holistic approach to various models, perspectives, theories involved in strategic management.	2, 3, 4, 7, 8
3	Analysis and assessment of implementation of urban projects	1, 2, 7, 8, 10

Mapping of COs and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1	-	1	2	3	-	2
CO2	2	3	3	2	-	1	2	3	-	2
CO3	2	2	3	3	1	1	2	3	1	2
Average	2.3	2.3	2.6	2	0.3	1	2	3	0.3	2

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

PROJECT PLANNING, ANALYSIS & APPRAISAL /EVALUATION			
Course Code	24HDE334	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:2:0	SEE Marks	-
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> To introduce the students to methods of implementation and management of projects related to Urban Infrastructure. 			
Module-1			
INTRODUCTION TO PROJECT PLANNING			
<ul style="list-style-type: none"> Introduction to terminologies and concepts of Project planning and formulation. Urban Projects: Scales, Institutions involved and their organization structure. Public relation and citizen participation: Personnel management, Manpower Planning, performance, appraisal, motivation and morale. Corporate Management: Systems approach to Urban Management, organizational design (Public Private Partnership in Urban Governance), Project Monitoring and Management, Management Information Systems. 			
Module-2			
LEGAL TOOLS CONNECTED WITH URBAN PLANNING AND DEVELOPMENT			
<ul style="list-style-type: none"> Requirement Analysis, Feasibility Check and Techniques involved. Operational Analysis: Performance, Business, Environment, Infrastructure and Engineering Design, Scenario Setting. Identification and estimation of project impacts, Desirable and undesirable project impacts. Identifying costs and benefits, Pricing, Opportunity costs, Shadow Prices, Cash flow, Payback periods and Internal Rate of Return. 			
Module-3			
METHODS OF PROJECT EVALUATION			
<ul style="list-style-type: none"> Single and multiple criteria project evaluations. Details of single Criteria cost -benefit analysis and its application with case studies. Concept of multi-criteria project evaluation and their applications: Concept of time scheduling, Project network and monitoring, PERT and CPM with their application in planning projects. Project monitoring under resource constraints, Urban risk and disaster management. 			
Module-4			
LOCAL PLANNING AND BUDGETING			
<ul style="list-style-type: none"> Methods of Urban Finance: Financial perspective of Urban Development. Overview of municipal finance. Municipal accounts, Municipal Corporate Planning, Program Planning and Budgeting. Local Financial Management, Financial Control & Delegation, Value capture Financing, Performance evaluation techniques, Cash flow management, Local debt management, Financial Information System, Municipal fiscal programming. Project scheduling and budgeting. 			
Module-5			
PROJECT IMPLEMENTATION PLAN			
<ul style="list-style-type: none"> Project Implementation Techniques and Phasing. Technical Aspects of cost, schedule and quality of deliverables. Environmental Impact Assessment (EIA) Human Aspects of Authority, orientation, Motivation and Group orientation. Risk Management and Execution Plans, resolving conflicts for Managing change, Problem solving and decision making. New methods, practices and technological advancements in project Implementation- Best Practices. 			
<p>Assessment Details: Methods of CIE need to be defined topic wise i.e.- assignments and Project work) The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE.) The student has to obtain a minimum of 50% in CIE to pass. Based on the CIE marks grading will be awarded.</p> <p>Continuous Internal Evaluation:</p> <ol style="list-style-type: none"> 1. Methods suggested: Submission of assignments on regular basis. 2. The course faculty has to decide the assignments and topics based on the modules. 3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal. 			

Suggested Learning Resources:**Books**

1. Daniel Halpin and Ronald Woodhead, "Construction Management", Wiley, 2nd Edition, 1997.
2. Krishnamurthy and S.V.Ravindra, "Construction Management", CBS Publishers & Distributors Pvt. Ltd, 2nd Edition, 2017.
3. Prasanna Chandra, "Projects Planning, Analysis, Selection, Financing, Implementation and Review", McGraw-Hill, 8th Edition, 2017.
4. L S Srinath, "PERT and CPR-Principles and Application", Affiliated East-West Press, 2001.
5. Harold Kerzner, "Project Management", Wiley, New York, 2003
6. Chitkara, "Construction Project Management", Tata McGraw- Hill, New Delhi
7. Kamaraju Ramakrishna, "Essentials of Project Management", PHI Learning, New Delhi, 2010.

Web links and Video Lectures (e-Resources):

1. https://onlinecourses.nptel.ac.in/noc23_ce59/preview
2. https://onlinecourses.nptel.ac.in/noc23_mg124/preview
3. <https://www.coursera.org/learn/uva-darden-project-management>
4. <https://exced.gsd.harvard.edu/integrated-project-management>
5. <https://www.udemy.com/course/practitioners-guide-to-cost-benefit-analysis/>
6. <https://www.youtube.com/watch?v=W2EdffbwcM&list=PLyqSpQzTE6M88imldb5qcexw-qXNikWR>
7. <https://www.youtube.com/watch?v=iHSEXPazWEg>

Skill Development Activities Suggested

1. Project Simulation: Use project management software or tools to simulate the planning and execution of a project to manage tasks, resources, and timelines in a controlled environment.
2. Risk Assessment - to identify potential risks in a project, assess their impact and develop risk mitigation strategies.
3. Time Management on effective time management techniques, such as creating Gantt charts, using productivity tools, and setting milestones.
4. Analysis of case studies: Urban projects feasibility and appraisal, Annual and Quarter Annual statements and Cash Flow statements.

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

Sl. No.	Description	Blooms Level
C01	Familiarisation with project planning and analysis principles.	II
C02	Develop comprehensive project proposals by defining project objectives, scope, and deliverables.	VI
C03	Comprehend risk assessment , conflict resolution and management.	II
C04	Familiarisation with project appraisal techniques.	V
C05	Applying tools for social, economic and environmental impact towards sustainable project planning	III

Program Outcome of this course

Sl. No.	Description	POs
1	Exposes the students about comprehensive project planning skills	1,2,3,4,6,9,10
2	Sensitize the students on feasibility, appraisal, evaluation and regulatory compliance adhering to legal requirements and industry best practices.	1,2,4,5,7,8
3	Establish the corelation between Urban Planning, monitoring and implementation through urban governance, finance and human resource management in Urban Design.	1,3,4,9,10

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	1	2	2	-	1	2	2	3	3
C02	1	3	2	2	3	1	1	1	3	3
C03	3	3	1	1	-	1	1	1	-	2
C04	3	3	2	-	-	-	2	2	1	2
C05	3	3	3	1	1	1	3	3	3	3

Mapping of COS and POs

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010
C01	3	1	-	1	-	2	2	1	1	3
C02	2	3	2	1	1	2	2	-	-	3
C03	3	1	2	1	2	2	2	2	1	3
Average	2.6	1.6	1.3	1	1.2	2	2	1	1.2	3

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/Tools	Generate Designs/Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

DISSERTATION			
Course Code	24HDC41	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	0: 12: 0	SEE Marks	50
Total Hours of Pedagogy	12	Total Marks	100
Credits	12	Exam Hours	-
Course Learning objectives:			
<ul style="list-style-type: none"> The studio focuses on project formulation strengthened by relevant research and synthesis of design solution for the identified habitat theme. 			
<p>The dissertation is the complete assimilation of academic and professional experience of the student.</p> <ul style="list-style-type: none"> The scope of the dissertation will encompass the study of habitat issues, current dilemmas in the urban-scape and the related theoretical framework, culminating in Design project. The dissertation would examine social, physical, economic, environmental, urban conservation issues with participatory and infrastructure provision-led objectives. The project definition, program development, design development process and implementation framework to form integral part of the project. <p>NOTE:</p> <ol style="list-style-type: none"> Each student must select and work on an area or topic approved by the institution, based on their proposal submitted during Dissertation Phase I in the previous semester. Topic should be based on current issues, research and professional interests. Format and guidelines shall be as laid down by the Institution. 			
Assessment Details (both CIE and SEE)			
<p>The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p>			
Continuous Internal Evaluation:			
<p>Continuous Internal Evaluation will be based on</p> <ol style="list-style-type: none"> Seminars, Assignments, and Dissertation Report. Two Internal Reviews, two External Reviews and Final Portfolio and report Submission. 			
Semester End Examination: Viva-Voce exam			
Suggested Learning Resources:			
Books			
<ol style="list-style-type: none"> Rowe, P. G. (1987). Design Thinking. MIT Press. Blake, G., & Bly, R. W. (1993). The Elements of Technical Writing. Macmillan. Farthing, S. (2016). Research Design in Urban Planning: A Student's Guide. SAGE Publications. MacCallum, D., Babb, C., & Curtis, C. (2019). Doing Research in Urban and Regional Planning. <i>Routledge</i>. Prominski, M., & Seggern, H. (2019). Design Research for Urban Landscapes: Theories and Methods. Routledge. 			
Web links and Video Lectures (e-Resources):			
<ol style="list-style-type: none"> http://kth.diva-portal.org/smash/get/diva2:343485/FULLTEXT01.pdf https://papers.cumincad.org/data/works/att/eef2.content.pdf http://www.untagsmd.ac.id/files/Perpustakaan_Digital_1/CITIES%20PLANNING%20Urban%20design%20method%20and%20techniques.pdf 			
Skill Development Activities Suggested			
<ol style="list-style-type: none"> Innovative Approaches in Data Presentation. Technical report that explains the concept, methodologies, and findings. 			
Course outcome (Course Skill Set)			
At the end of the course the student will be able to:			
Sl. No.	Description	Blooms Level	
C01	Students develop skills to generate research context for the identified theme/topic to progress into project.	V	
C02	Ability to accomplish Contextual studies relevant to the project.	V	
C03	Ability to apply appropriate representation techniques to communicate the studies.	VI	
C04	Generate solutions through design demonstration.	VI	
C05	Assess Impact of development on habitat systems.	VI	

Program Outcome of this course

Sl. No.	Description	POs
1	Assess habitat systems and identify issues.	1, 2, 3, 4, 6, 7, 8
2	Formulate critical approach to assess issues and evolve framework for study.	2, 3, 4, 5, 6, 7, 8
3	Generate solutions for the identified issues within the settlement.	3, 4, 5, 6, 7, 8, 10

Mapping of COs and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	3	3	2	-	1	2	2	1	1
C02	3	3	3	2	-	1	2	2	2	2
C03	1	2	3	3	2	-	-	-	1	2
C04	2	2	3	3	3	3	3	3	1	2
C05	1	3	3	2	2	3	3	3	2	2
Average	2	2.6	3	2.4	1.4	1.6	2	2	1.4	1.8

Graduate Attributes

Knowledge	Analytical Skills	Application of Research	Application of latest Technology/ Tools	Generate Designs/ Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative aptitude	Opportunity for Continued Learning
P01	P02	P03	P04	P05	P06	P07	P08	P09	P010

Mapping Co-relation	Low	Medium	High	No
	1	2	3	-

