VTU- SYLLABUS 2022-23 M ARCH (URBAN DESIGN) CBCS-OBE			
SEMESTER-I			
COURSE: URBAN DESIGN STUDIO-I INTEGRATED WITH UDPT(Urban Design Principle and Techniques)			
Course Code:	MAUD101	CIE Marks	50
Teaching hours /Week (L:P:SDA)	1:5:6	SEE Marks	50
Total Hours of Pedagogy	12	Total Marks	100
Credits	6	Exam Hours	Viva Voce

Course Learning Objectives:

1. The goal of the studio-I shall be to understand that urban design at its core is a connective discipline. The objective shall be to understand, organize and synthesize in visual, tactile and measurable ways sustained improvements in the places that make up our urban living environment.
2. The objective of the course is to introduce students to the methods of reading and understanding the physical fabric of a city

Studio Outline

The studio will incorporate interdisciplinary principles, processes and interactions that are fundamental to Urban Design. The studio tasks will include the following;

1. Documenting, analyzing and understanding textures and places that make an urban area.
2. Understanding the nature of interrelation between in formal and formal issues connected with intervention into urban fabric.
3. To identify and learn basic urban design tools.
4. To implement the same in a project of single use or multiuse built structure connected with place making and inclusive.

Project I will consist of documenting , analyzing and evolving proposals for urban components like streets, public open spaces, public gathering places, precincts of historically important buildings in the city. The focus will be on understanding the concepts of “Fabric, Texture and Weave”.

Project II will focus on the goals and objectives of “intervention to improve”. The project will identify a specific area in an identified city to understand the process of documenting the true picture of the area and creating scenarios which will clearly demonstrate the needs of intervention to improve. The project will end with the design of multi or single use built forms.

Teaching Learning Process	Lecture sessions, Site visits, Student presentations, Group discussions and presentation, Periodic Reviews, Workshops are part of the Teaching Learning Process

Assessment Details (Both CIE and SEE)

Assessment Details (both CIE and SEE) The weight age 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 Internal Reviews, External Reviews and Final studio report and individual project Submission/VIVA VOCE

Semester End Examination: Viva-voce: The viva voce shall be conducted for a duration of 20 minutes (per student) for the subjects listed under viva voce for all the semesters

Suggested learning Resources

1. A Place In The Shade: The New Landscape & Other Essays Paperback, Charles Correa , Penguin Books; 2010
2. Cities for People, Jan Gehl, Island Press; 2010
3. Design of Cities, Edmund N Bacon, Penguin Books; 1976
4. Essentials of Urban Design, Mark Sheppard CSIRO Publishing; 2015
5. Fundamentals of Sustainable Urban Design, Avi Friedman, Springer Nature Switzerland AG; 2021
6. Great Streets, Allan B. Jacobs, The MIT Press; 1995
7. Public Places Urban Spaces: The Dimensions of Urban Design, Matthew Carmona, Tim Heath, TanerOc, Steve Tiesdell, Architectural Press; 2010
8. The Kinetic City & Other Essays, Rahul Mehrotra, ArchiTangle GmbH; 2021
9. Urban Design Reader, Matthew Carmona, Steve Tiesdell, Architectural Press;2007
10. Urban Design: The Composition Of Complexity by Ron Kasprisin, Routledge; 2019

Web links and Video Lectures (e-Resources)

1. Urban Design, Center for Design Excellence, http://www.urbandesign.org/home.html
2. Project for Public Spaces https://www.pps.org/
3. Urban Design Lab https://urbandesignlab.in/resources/udl-digital-resources/
4. Urban Design Group https://www.udg.org.uk/about/what-is-urban-design
5. Urban Environment Management https://www.gdrc.org/uem/planning/urban-planning.html
6. Planetizen https://www.planetizen.com/
7. Space Syntax https://spacesyntax.com/
8. https://semanurcan.wordpress.com/2019/10/27/the-city-image-and-its-elements-by-kevin-lynch/ https://www.writingcities.com/2015/11/10/gordon-cullens-townscape/

Skill Development Activities suggested

1. Urban design related place reading and representation techniques
2. Mapping the observation and inferring inferences and conclusion

3. Skills that enable analysis and identify the Urban design issues
4. Ability to come with Urban design strategy and Design project
5. Skills to read and analyze maps and translate through writing.
6. Learning the process of public outreach for data collection.
7. Analytical abilities to evaluate urban design challenges.

Course outcome(Course skill set)

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

Sl No	Description	Blooms level
CO1	Able to identify urban components that influence urban area(study commonality)network and systems	IV
CO2	Means of engage with the place, people, method of data collection/documentation of the practices that influences urban environment.	V
CO3	Able to Identify issues/conflicts that influence urban area	V
CO4	Able to generate UD strategies	VI
CO5	Urban Design intervention within the study area	VI

Program outcome of this course

Sl No	Description	POs
1	Ability to read the urban components	1,2,9
2	Ability to engage, interact and document the place	2,3,7
3	Able to generate strategies to address the UD issues	2,3,7,8
4	Ability to demonstrate urban design solution	3,5,6

Mapping of CO s and PO s

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	-	-	2	2	2	1
CO2	3	3	2	2	-	-	2	2	2	2
CO3	2	3	3	1	-	1	2	2	3	2
CO4	2	2	3	2	3	2	2	2	1	1
CO5	1	2	2	2	3	2	2	2	-	2
Average	**2.2**	**2.6**	**2.4**	**1.8**	**1.2**	**1**	**2.0**	**2.0**	**1.6**	**1.6**

Graduate attributes

Knowledge	Analytical skills	Application of research	Application of latest technology and tools	Generate design/solution	Ethics	Societal concern	Environmental concern	Collaborative aptitude	Opportunity for continued learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping correlation	Low	Medium	High	No
	1	2	3	--

COURSE: THEORY OF URBAN FORM			
Course code:	MAUD102	CIE Marks	50
Teaching hours /Week (L:P:SDA)	2:1:0	SEE Marks	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	4	Exam Hours	3

Course Learning Objectives:

The course is intended as a comprehensive study of urban form, processes, and urban spaces in historical and theoretical terms.

Module-1

INTRODUCTION TO URBAN DESIGN AND URBAN FORM

Urban design- (ideology/theory) and the various concerns (scope and objectives) of the discipline; components of urban design and their inter-dependencies.

urban form- morphology (significance of understanding Urban form and Urban Process). Determinants of urban form-natural and human-made determinants

Teaching Learning Process	Introduction to the topic through lectures, readings, and discussions. Presentation of urban design case studies by faculty/students to understand the various scopes and objectives of urban design

Module-2

STUDY OF URBAN FORM

Comparison between the various perspectives of studying and analyzing urban form- space; conservation, evolution, and the life of urban form.

Urban space and form through history (overview)

Western context: The Early Cities (Neolithic, classical antiquity), Medieval Towns, Renaissance and Baroque Planning, Form of modern city and early cities of capitalism (industrialization and influences City beautiful movement, City and Garden, Camilo Sitte); Modern Movement (Tony Garnier, Corbusier, F L Wright, Arturo Soria Y Mata, Antonio Sant 'Elia), post-World War II (Doxiades and Ekistics), Megastructure; Cites of sweat equity and highway; subsequent directions.

Indian Context: The Early Cities, Mughal and Medieval Towns, Temple Cities, Colonial influences, post-independence, and modern cities (Chandigarh, Bhubaneshwar, Gandhinagar) and further developments.

Teaching Learning Process	Introduction to the topic through lectures, readings, and discussions. Documentation and analysis of urban form (evolution, city at different scales, analysis of urban form determinants) through case studies from all or a few of the topics listed above. Writing research paper

Module-3

APPROACHES TO READING URBAN FORM AND SPACE(western, Islamic cities and influences)

City as patterns; diagrams; spaces and ideas (organic; grid; political-functional-secularist-socialist diagrams; grand manner; skyline; city edge; urban division; public spaces- various typologies including street and parks); subsequent direction and further developments.

Teaching Learning Process	Introduction to the topic through lectures, readings, and discussions. Discussion of various case studies of cities according to patterns

Module-4

URBAN PROCESS

Rise and fall of cities; disaster; destruction and reconstruction; Haussmanization; incremental changes; urban renewal; contemporary issues and phenomenon shaping urban form and space (sprawl, sustainable growth, transportation).

Teaching Learning Process	Introduction to the topic through lectures, readings, and discussions.

Module-5

THEORIZING URBAN FORM

(Introduction to modern, post-modem perspectives and influences)

Utopias; ideas of Gordon Cullen, Jane Jacobs, William Whyte, Mumford, Kevin Lynch (Good City Form; Imageability and Memory), New Urbanism of Krier; Public and Private domains; Suburbs and periphery; Privacy, Territoriality and Proxemic theory; Defensible spaces; ideas of community through design; treatment of urban space; future of the city (contemporary practices and directions).

Various theoretical views associated with nature of city form (normative, positive, substantive, and procedural theories); Cosmic, Machine and Organic Models; Descriptive and functional theories; Alternative theoretical postulations.

Teaching Learning Process	Introduction to the topic through lectures, readings, and discussions. Shared reading from a list of key texts formulated

Assessment Details (CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. Theminimum 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, Tests and Term Paper submission.

Semester End Examination:

Theory Examination shall be held for 3-hour duration, students are expected to answer FIVE full questions, one question from each module.

Suggested learning resources:

Books:

1. Spiro Kostof,the City Assembled, Thames and Hudson.
2. SpiroKostof, The City Shaped, Thames and Hudson.
3. Jon Lang, Urban Design Typology and procedures, Architectural Press
4. A.E.J. Morris, History of Urban Form, Longman Scientific and Technical.
5. KevinLynch, Good City Form, MIT Press.
6. Edmund Bacon, Design of Cities.
7. Geoffrey Broadbent, Emerging Concepts of urban Design

Web links and Video Lectures(e-Resources)

https://ocw.mit.edu/courses/4-241j-theory-of-city-form-spring-2013/video_galleries/video-lectures/

Skill development activities suggested

Group discussions about the form and structure of different cities by picking one example each
Shared reading from a list of key texts formulated
Presenting aspects of urban form of Indian cities through examples

Course outcome (course skill set)

Sl. No.	Description	Blooms Level
CO1	Identify scope, objectives of urban design, determinants of urban form	II
CO2	Study evolution of urban form through history with western and Indian contexts	III
CO3	Familiarize with approaches to reading urban form- reading cities as patterns	IV
CO4	Comprehend urban process	II
CO5	Analyze different theories related to urban morphology	IV

Program outcome of this course

Sl. No.	Description	POs
1	Understanding the meaning and components of urban form	1, 2
2	Analyzing the urban form of various settlements/cities across time	2, 3
3	Understanding urban processes	1, 2 , 3
4	Analyzing the theoretical views on urban form	1, 2, 3

Mapping of COs and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	-	-	-	-	-	-	-	2
CO2	2	3	2	-	-	-	-	-	2	2
CO3	2	3	3	1	-	-	-	-	-	2
CO4	3	2	1	-	-	-	-	-	-	1
CO5	1	2	2	-	-	-	-	-	1	1
Average	2.2	2.2	1.6	0.2	0.0	0.0	0.0	0.0	0.6	1.6

Graduate attributes

Knowledge	Analytical skills	Application of research	Application of latest technology/tools	Generate design/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	-

COURSE: CITY PLANNING PROCESS IN INDIA			
Course code:	MAUD103	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	3

Course Learning Objectives:

1. To expose students to the process of city planning and implementation in India.
2. To learn about the institutional context of city planning including national, state and local level policies, legislations and regulations used to monitor, aid, manage and design the growth and transformations in cities.
3. To understand the issues and the impact of planning policies and regulations on the physical, social, economic and ecological environment of cities, and learn about current planning practices and strategies to address them.
4. To undertake a critical review of the planning, development and regulatory processes and practices shaping the Indian city.

Module-1

INTRODUCTION TO THE CITY PLANNING PROCESS

- A historical overview of city planning in the Indian context, the goals of planning and significance for urban design
- Planning legislations in India - A review of national, state and local level policies, programmes, Acts and regulations used to monitor, aid, manage and design the growth and transformations in cities through history.
- Scope and purpose of various plan types - Perspective plans, regional plans / structure plans, and master plans / comprehensive development plans, local are plans, special purpose plans, annual plans, projects / schemes.

Teaching Learning Process	- Introduction to City Planning– lectures, videos, readings, class activities and discussion - History of plan-making in India and study of plan types and legislations – readings, presentations and discussion seminar

Module-2

THE PLAN MAKING PROCESS

- Urbanisation challenges and planning process in the regional context, master planning, visioning, and development of planning strategies and policies
- Techniques of data collection, mapping, survey, projection of requirements; preparation of base map, developmental plan proposals and delineation of zones
- Assessment of developmental issues for sectors such as land use, transportation, ecology and environment, urban poor and urban design among others.

Teaching Learning Process	- Understanding urbanization challenges and analyzing planning processes across sectors - group work to analyse various Master Plans, presentations, readings and discussion seminar

Module-3

LAND USE AND ZONAL REGULATIONS (Development tools)

- Land use zones: History of zoning, current zoning sub classification, permissible and prohibited activities, types of zoning, drawbacks of zoning, issues and limitations;
- Zoning tools: Impacts of FAR, TDR and floating FSI, incentive zoning and other regulatory mechanisms

Teaching Learning Process	Discussion on implications of land use regulations and zoning tools - Case studies, readings and discussion seminar

Module-4

EMERGING PLANNING PRACTICES AND CONCEPTS

- A review of land pooling, urban renewal, conservation and redevelopment processes
- Understanding concepts of smart growth, transit oriented design, growth management strategies, transit metropolis, new urbanism, advocacy planning, smart city and other current schemes and programs in practice in Indian cities.

Teaching Learning Process	Understanding the planning practices and concepts - Case examples, National policy and mission documents, readings and discussion seminar

Module-5

PLAN IMPLEMENTATION, MONITORING MODALITIES AND CRITICAL REVIEW OF PLANNING PROCESS

- Plan implementation and monitoring - Appeals, appellant authority, and issues related to unauthorized and informal developments.
- Public private and people partnerships; resource mobilization; plan monitoring and review; public participation techniques; and zonal / ward level plans.
- Critical review – Discussion of alternatives to the master planning process in India.

Teaching Learning Process	Discussion on outcomes and impacts of plan implementation and critical review – readings, case examples and discussion seminar

Assessment Details(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 weekly assignments, class presentations, participation in seminar discussions and term paper / report submission.

Semester End Examination:

Theory Examination shall be held for 3-hour duration, students are expected to answer FIVE full questions, one question from each module.

Suggested learning resources:(Includes but not restricted to the following)

Books:

1. Taylor, John L and Williams, David G.1982. Urban Planning Practice in Developing Countries, Pergamon Press, ISBN: 978-0080222257
2. URDPFI Guidelines Volume I, IIA and IIB, 2014
3. Jain, A. K. 2017. Urban Transformation: Making Cities Inclusive, Safe, Resilient and Sustainable
4. Jain, A. K. 2018. Town Planning: Principles, Process and Practice
5. Kumar, A., Vidyarthi, S., & Prakash, P. 2020. City Planning in India, 1947–2017 (1st ed.). Routledge India.
6. Glaeser, Edward. 2012. Triumph of the City. London, England: Pan Books.
7. Master Plan documentsof Bangalore, New Delhi, Mumbai, Chennai and other Indian cities
8. Selected readings provided in class

Web links and Video Lectures(e-Resources): (Includes but not restricted to the following)

1. URDPFI Guidelines 2014 (http://moud.gov.in/URDPFI).
2. The Constitution (74th Amendment) Act, 1992. (http://indiacode.nic.in/coiweb/amend/amend74.htm)
3. Five Year Plans Introduction (https://mospi.gov.in/documents/213904/369745/Five_Year_Plan.pdf)
4. City Planning in India, 1947-2017 (https://www.researchgate.net/publication/342252824_City_Planning_in_India_1947-2017)
5. Understanding India's New Approach to Spatial Planning and Development: A Salient Shift? (https://www.researchgate.net/publication/331486168_Understanding_India's_New_Approach_to_Spatial_Planning_and_Development_A_Salient_Shift)
6. The Karnataka Town and Country Planning Act, 1961 (https://dpal.karnataka.gov.in/storage/pdf-files/11%20of%201963%20(E).pdf)
7. A. Srivathsan: 60 years of Planning – Lessons from Chennai, Urban Planning in India (https://soundcloud.com/crdfpodcast/a-srivathsan-60-years-of-planning-lessons-from-chennai)

Skill development activities suggested– Not Applicable

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 trajectory of City Planning approaches and analyse thechanging policy and legal mandates through time on city development	I, II, IV
CO2	Recognise the role of visioning, regional and master planning processes and cross-sectoral analysis in addressing the consequences of urbanization, and evaluate consequences of planning decisions	I, II, IV, V, VI
CO3	Analyse the implications of land use regulations and zoning tools applied in cities to assess the social, economic and environmental impacts	IV, V
CO4	Be conversant with and analyse the outcome and impacts of schemes, missions and planning tools adopted in current planning practice	I, II, IV
CO5	Understand the challenges of plan implementation and conduct a critical review of planning and development processes in the Indian context.	II, IV, VI

Blooms Levels:
I – Knowledge
II- Comprehension
III – Application
IV – Analysis
V – Synthesis
VI - Evaluation

Program outcome of this course

Sl. No.	Description	POs
1	Be conversant with the City Planning process and understand the significance of policies and legal mandates as a framework for urban design practice.	1, 2, 10
2	Understand the challenges of urbanization and social, environmental and economic impact of planning policies, Master Plans and regulatory tools on city form and development and apply learnings as recommendations for future planning and urban design.	1, 2, 3, 6, 7, 8, 9, 10
3	Develop an critical framework to assess the outcomes and impacts of currentprograms and plans, and their implementation, in shaping city design and developmentat the local area level; and recommend possible steps for future planning efforts.	1, 2, 3, 4, 6, 7, 8, 10
4	Evaluate and critically review planning processes to assess impact on urban form, social and environmental justice and livability and think of alternative methods to guide urban design practice.	2, 3, 7, 8, 10

Mapping of COs and POs

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	-	-	-	-	1	1	-	2
CO 2	2	3	2	-	1	2	3	3	2	3
CO 3	2	3	2	1	1	2	3	3	-	3
CO 4	2	2	2	-	-	2	3	3	-	3
CO 5	1	2	1	-	-	2	2	2	-	2
Average	2.0	2.4	1.4	0.2	0.4	1.6	2.4	2.4	0.4	2.6

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
PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**

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

COURSE: SOCIAL THEORY AND URBAN DESIGN			
Course Code:	MAUD104	CIE Marks	50
Teaching hours /Week (L:P:SDA)	2:1:0	SEE Marks	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	03

Course Learning Objectives:

The course introduces first semester students to conceptual and theoretical perspectives of urban social theory.

Module-1

Classical Theoretical Perspectives:

Karl Marx; (Capitalism and class); Friedrich Engels (Living conditions of the urban working class in post-industrialized towns); Ferdinand Tonnies (Community and Association), Emile Durkheim (Social solidarity); Georg Simmel (Urban experience, Social distance, Philosophy of money);Max Weber (Social structure of city and urban community).

Teaching Learning process	Introduction to the course content through lectures

Module-2

Contemporary Theoretical Perspectives:

Robert Park (Human ecology, Symbiotic versus Societal organization, Dynamics and processes of human community: population, material culture (technological development), nonmaterial culture(customs and beliefs), Natural resources of the habitat, Societal pyramid, Differences between ecology and human ecology); Louis Wirth (urban theory on urbanism as a function of population density, size and heterogeneity); Ernest Burgess (Concentric Zone Theory); Homer Hoyt (Sector Theory); Harris and Ullman: Multiple Nuclei Theory).

Teaching Learning process	Introduction to the course content through lectures

Module-3

Political Economy:

Political and economic forces in a society with reference to works of Henri Lefebvre; Michael Storper and Richard Walker (Theory of location and labour); Manuel Castells; David Harvey;Logan and Molotch(City as Growth Machine);Saskia Sassen (Global City); John Friedmann (World City Hypothesis); Michael Dear (Los Angeles School/ Chicago School).

Teaching Learning process	Introduction to the course content through lectures

Module-4

Social Life inthe Public Realm (Discourses in the West):

Michel de Certeau (Everyday life in the city); Fredrick Law Olmsted (The civilizing effect of park space in cities); RichardSennet (Fall of the Public Man); Wilson &Kelling (Broken Windows Theory); Carr et al. (The Nature of Public Life); Mike Davis (The Fortress LA: The Militarization of Public Space); William Whyte (Social life in small urban public spaces), Jane Jacobs (eyes on the street; sidewalk ballet).

Teaching Learning process	Introduction to the course content through lectures

Module-5

Social Theory and Urbanism In India

M N Srinivas (rural sociology); SudiptaKaviraj (public realm in Indian cities); Charles Correa (post-Independence Indian urbanism); Partha Chatterjee (civil society-political society); Rahul Mehrotra (static-kinetic city); Solomon Benjamin (occupancy urbanism); Ananya Roy (Informality in Indian cities).

Teaching Learning process	Introduction to the course content through lectures

Assessment Details (Both CIE and SEE)

The weight age 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, term paper presentation and submission.

Semester End Examination:
Theory examination shall be held for 3-hour duration, students are expected to answer five full questions, one question from each module

Suggested learning Resources

1. Borden, Iain, Tim Hall and Malcolm Miles (Eds.). 2003. *The City Cultures Reader*. Routledge
2. Benjamin, S. 2008. Occupancy Urbanism: Radicalizing Politics and Economy beyond Policy and Programs. International Journal of Urban and Regional Research, 32.3, 719-729.
3. Castells, Manuel. 1978. *City, Class and Power (Sociology, politics &cities).* Palgrave Macmillan
4. Chatterjee, Partha. 2006. *Politics of the Governed: Reflections on Popular Politics In Most of the World*. Columbia University Press.
5. Correa, Charles. 1989. *The New Landscape: Urbanisation in the Third World.* London. Butterworth Architecture
6. Correa, Charles. 2000. Housing and Urbanization. UDRI Mumbai
7. Davis, Mike. 1990. *City of Quatrz: Excavating the Future in Los Angeles.* Verso
8. Harvey, David. 2001. *Spaces of Capital: Towards a Critical Geography.*Blackwell/Wiley
9. Harvey, David. 2000. *Spaces of Hope.* University of California Press
10. Jacobs, Jane. 1961. *The Death and Life of Great American Cities*. Vintage
11. Kaviraj, Sudipta. 1997. *Filth and the Public Sphere: Concepts and Practices about Space in Calcutta*. Public Culture, 10 (1), 83-113.
12. Lin, Jan and Christopher Mele (eds.).2012. *The Urban Sociology Reader*. Routledge
13. Mehrotra, R. (2008) *Negotiating the Static and Kinetic Cities: The Emergent Urbanism of Mumbai*, in Huyssen, A. (ed.) Other Cities, Other Worlds: Urban Imaginaries in a Global Age. Duke University Press: Durham and London. pp.205-18.
14. Roy, Ananya. 2005. *Urban Informality: Towards an Epistemology in Planning*, Journal of the American Planning Association, 71 (2), 147-158.

Web links and Video Lectures (e-Resources)	1. https://www.youtube.com/watch?v=nBUq21iahpI 2. https://www.youtube.com/watch?v=gaw8iUi-i6E

Skill Development Activities suggested

1. Walking around the city for photo-documentation and activity-mapping
2. Attending seminars, talks and workshops organized by parent institution and other institutions in the city and outside.

Course outcome(Course skill set)

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

Sl No	Description	Blooms level
CO1	Gain knowledge about urban sociology and built form	III
CO2	Can analyze scholarly papers on subject matter	IV
CO3	Make presentations based on subject matter	IV
CO4	Interpret social phenomena into drawings of places and space	IV
CO5	Understand contemporary concepts of urbanism in Indian cities	III

Program outcome of this course

Sl No	Description	POs
1	Students' single and group presentations based on the course material readings will help them with their overall presentation skills	1 ,2, 4 ,5,9,10
2	Students will gain knowledge about urban sociology and built form in different contexts	1, 2, 3,7, 9,10
3	The course will sharpen students' ability to interpret social phenomena into drawings of places and space	1,2, 3,4,6, 7,9, 10
4	Students will learn contemporary concepts of urbanism in Indian cities that they can apply in their architecture design studios	1, 2, 3, 10

Mapping of COs and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	-	-	-	3	-	3	3
CO2	3	3	3	-	-	-	-	-	-	3
CO3	1	3	-	3	2	-	-	-	3	2
CO4	3	3	3	3	-	1	1	-	1	2
CO5	3	2	3	-	-	-	-	-	-	3
Average	**2.6**	**2.6**	**3**	**1.2**	**0.4**	**0.2**	**0.8**	**0**	**1.4**	**2.6**

Graduate attributes

Knowledge	Analytical skills	Application of research	Application of latest technology and tools	Generate design/solution	Ethics	Societal concern	Environmental concern	Collaborative aptitude	Opportunity for continued learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping correlation	Low	Medium	High	No
	1	2	3	--

COURSE: INDIAN URBANISM			
Course Code:	**MAUD15A**	CIE Marks	100
Teaching hours /Week (L:P:SDA)	2:1:0	SEE Marks	00
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	---

Course Learning Objectives:

The course is intended to develop an understanding of key issues of urbanism in India, its dilemmas, ideologies and the new patterns that it has taken with neo-liberalism.

Course outline

The course covers on issues of Indian urbanism related to polity and colonial legacy, ideology of tenure and exchange, environment and water, daily life and informal sector, gender, art and media in the city. The course would be conducted through readings, discussions and invited lectures covering case studies and published research works**.**

Teaching learning process	Introduce each subsection through case study and generate discussion through article reading

Assessment Details (Both CIE and SEE)

Assessment Details (CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 100% and for Semester End Exam (SEE) is 0%. The minimum passing mark for the CIE is 50% of the maximum marks. 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).

Continuous Internal Evaluation:

Continuous Internal Evaluation will be based on weekly assignments, class presentations, participation in seminar discussions and term paper / report submission.

Semester End Examination: (not applicable)

Suggested learning resources:

1. K. Sivaramakrishnan and Arun Agrawal (Edit), Regional Modernities: The Cultural Politics of Development in India, Stanford University Press, 2003.
2. Kenneth R Hall (Edit), Structure and Society in early South India, Oxford University Press, 2004.
3. Malcolm Miles and Tim Hall (Eds), The City Cultures Reader, Routledge Taylor &Francis Group,2004.
4. Partha Chatterjee, The Politics of the Governed, New York: Columbia University Press, 2004.
5. Reader compiled by course instructor.

Web Links and Video lectures (E-resources):

1. https://www.youtube.com/watch?v=LCw2LOKqO-Q&t=776s
2. https://www.youtube.com/watch?v=qUU5CTlCBq4
3. https://www.youtube.com/watch?v=esPJRnKEyHU
4. https://www.youtube.com/watch?v=Y40pp8OFubs

Skill development suggested:

1. Compilation of readings available on Indian urbanism through group work
2. Familiarization of various patterns of Indian urbanism

Course outcome(Course skill set)

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

Sl No	Description	Blooms level
CO1	Familiarize the key issues of urbanism in India	I
CO2	Understanding of different ideologies and urban pattern	IV
CO3	Familiarization of Various tools and lenses in reading the urban pattern	IV

Program outcome of this course

Sl No	Description	Pos
1	Comprehend the issues of urbanism in India	1,2,7,8
2	Knowledge of urban pattern reading	2,3,4,9,10
3	Relate and application of tools and technology	4,6

Mapping of CO s and PO s

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	-	-	-	2	2	1	1
CO2	2	3	2	3	-	-	2	3	3	2
CO3	-	-	2	3	-	2	1	-	-	2
Average	**1.6**	**1.6**	**2**	**2**	**-**	**1**	**1.6**	**1.6**	**1.3**	**1.6**

Graduate attributes

Knowledge	Analytical skills	Application of research	Application of latest technology and tools	Generate design/solution	Ethics	Societal concern	Environmental concern	Collaborative aptitude	Opportunity for continued learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping correlation	Low	Medium	High	No
	1	2	3	--

COURSE: SPATIAL /SOFTWARES SKILLS FOR URBAN DESIGN & APPLICATION IN CITY READING			
Course Code:	**MAUD15B**	CIE Marks	100
Teaching hours /Week (L:P:SDA)	2:1:0	SEE Marks	00
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	---

Course Learning Objectives: This course aims at study and application of software skills that matters in city reading and visual expression

Course outline

1. Basic software skill (presentation): introduction and advance study in Photoshop, InDesign, Lumion, Prezi, Sketch up modeling etc.
2. Audio visual skill for effective presentation : Basics of Photography, Videography, Editing techniques and its application in city reading and application of such tools in collection of city data(tangible and intangible), illustration through visuals/sound(movie making), graphical representation, expressing conceptual idea, processing and participatory planning, stake holders meeting etc

Teaching learning process	Introduction to the course content through lectures, guest talk, case study, and practical exercises-use of appropriate tools and software

Assessment Details (Both CIE and SEE)

Assessment Details (CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 100% and for Semester End Exam (SEE) is 0%. The minimum passing mark for the CIE is 50% of the maximum marks. 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).

Continuous Internal Evaluation:

Continuous Internal Evaluation will be based on weekly assignments, class presentations, participation in seminar discussions and term paper / report submission.

Semester End Examination: (not applicable)

Suggested learning resources:

1. Edmund N Bacon- Design of cities -A Penguin Book
2. Jacobs , Allan B, “Great streets “MIT press 1993

Web Links and Video lectures (E-resources):

1. https://clipchamp.com/en/video-editor/
2. https://www.youtube.com/watch?v=k5-8XQ24yjU
3. https://www.youtube.com/watch?v=MqwlW76sFCM
4. https://www.youtube.com/watch?v=gYO1uk7vIcc

Skill development suggested:

1. Integration of visual techniques for better communication
2. Develop tools and techniques for internalization of the subject and interactive presentation

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 available techniques and application	IV
CO2	Develop skills for expressing the concern and idea	IV
CO3	Interactive skills and its application	VI

Program outcome of this course

Sl No	Description	POs
1	Able to develop skills of presentation and visual techniques	4,5,9
2	Application of software skills and integration of visual techniques for effective communication	1,2,4,5

Mapping of CO s and PO s

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	3	2	3		1	2	2	2	2
CO2	2	2	2	1		1	2	1	1	1
CO3	1	1	2	3	3	1	2	2	2	2
Average	**1.3**	**2**	**2**	**2.3**	**1**	**1**	**2**	**1.6**	**1.6**	**1.6**

Graduate attributes

Know ledge	Analyti cal skills	Applicati on of research	Applicatio n of latest technology and tools	Generate design/s olution	Ethics	Societal concern	Environ mental concern	Collabor ative aptitude	Opportunity for continued learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping correlation	Low	Medium	High	No
	1	2	3	--

COURSE: GEOGRAPHICAL INFORAMTION SYSTEMS -I			
Course code:	**MAUD15C**	CIE Marks	100
Teaching hours /Week (L:P:SDA)	2:1:0	SEE Marks	00
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	---

Course Learning Objectives:

1. History and development of GIS. Understand GIS as a decision-support tool in urban scenarios., Practical understanding of GIS concepts, techniques and real-world applications in spatial planning.
2. Utilizing free and open-source data and software to make GIS maps for Desktop and the web, GIS is a Bridge between the conceptual realms - Architecture /Site - Terrain Analysis/ Landscape architecture/Urban Design and urban planning.

Lecture and hands-on lab exercises: Students will complete lab exercises using any good Geographical; and Spatial information systems software with any DBMS.

HISTORYANDDEVELOPMENT OF GEOGRAPHICALINFORMATIONSYSTEMS, INTRODUCTION TO THE GIS ROOTS IN CARTOGRAPHY

MapsandtheirhistoricaldevelopmentAdvantagesofGISovermanualmethods,first automaticprocessingofgeographicalinformation, Spatial learning and development, Using and learning maps, defining a map, other representations of the world, Mappingconcepts,featuresandproperties. Important milestones in the development of GIS, Recent developments.

Teaching Learning Process	Introduction to the course through Lectures. Major areas of application through lectures, hands-on and videos

SPATIAL DATA STRUCTURE AND MODELS

Types of information in a digital map, The shape of the earth, Datum types, General coordinate systems, Earth coordinate geometry, Map projections, World geographic reference system (GEOREF), Concept of the grid on the earth's surface and its required correction.Information organization and data structure, Geographic data and geographic information, The relationship perspective of information organization. Data– Fundamental concepts, Spatial – non-spatial data, database management system, data models.

Data collection workflow, Field mapping/collecting data using the Mobile application. Primary & secondary geographic data capture, integrating datafrom external sources, Geographic data formats, capturing attribute data, Managing a data capture project, and Data editing

Teaching Learning Process	Introduction to the course content through lectures. Hands-on training on earth coordinate geometry, Map projections, geographic reference system. Data modeling theoretical concept with hands-on training.

GIS MODEL TO REPRESENT REAL-WORLD DATA

Vector data model, storing points and lines, storing area boundaries, The Topological approach, Storing vector data. Raster data models-realizing the raster model, storing raster data structures, Semi-Automatic conversion between vector and raster models, Geographical representation of objects, Object attributes, and Object relations, from database to GIS to map. Introduction to Google Earth and its connection with GIS. Spatial and Nonspatial queries.

Teaching Learning Process	Introduction to the course content through lectures. Hands-on training on capturing and processing raster, vector data along with attribute data and Google Earth.

USE OF OPEN-SOURCE DATA IN GIS

Using Freely available data sources to generate and process raster and vector data for example Open Street Maps, Google Maps, Bing maps, wiki maps, and census data.

Integrating 3rd dimension of data and processing 3D maps and TerrianDEM analysis

Teaching Learning Process	Introduction to the course content through lectures. Hands-on training on working with basic raster and vector data models in GIS, and utilization of Open-source vector data

Compose and create a printable map in GIS, build the 3D model in virtual mode, Urban Planning and design exercises.

Map composition with 2D and 3D views as well as a key map with a North arrow, scale bars legend and attribute integration. Create a web map for access to the internet. Visualization and navigation of maps

Teaching Learning Process	Introduction to the course content through lectures. Hands-on training on printable 2D and 3D maps along with analysis, also porting the map on to the web.

Assessment Details (CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 100% and for Semester End Exam (SEE) is 0%. The minimum passing mark for the CIE is 50% of the maximum marks. 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).

Continuous Internal Evaluation:

Continuous Internal Evaluation will be based on weekly assignments, class presentations, participation in seminar discussions and term paper / report submission.

Semester End Examination: (not applicable)

Suggested learning resources:

Books:

1. Anupama Pai, “An Introduction to Maps”, Foundation for Ecological Research, Advocacy and Learning, 2004.
2. Peter A. Burrough, Rachael A. McDonnell, and Christopher D. Lloyd, “Principles of Geographical Information Systems”, Oxford University Press, 2015
3. Frederik Ramm, Jochen Topf, Steve Chilton, “OpenStreetMap: Using and Enhancing the Free Map of the World”, UIT Cambridge, 2010.
4. Robert Laurini, “Information Systems for Urban Planning: A Hypermedia Cooperative Approach”, Taylor Francis Ltd, 2001.
5. Michael Zeiler, “Modeling our world: The ESRI Guide to Geodatabase Concepts”, ESRI Press, 2010. 6. C.J.Date, ” An Introduction to Data base Systems”, Addison-Wesley Publishing Company, 1995
6. RamezElmasri, Shamkant B. Navathe, “Fundamentals of Data base Management System”, Pearson, 2016.
7. Anita Graser ,quot;LearningQGISquot; PAKT open source, 2016.
8. GISP Dr. John Van Hoesen, Dr. Luigi Pirelli, GISP Dr. Richard Smith Jr., GISP Kurt
9. Menke, quot; A refreshing look at QGIS: Mastering QGISquot;, PACKT Pub., 2016
10. Kurt Menke. Locate press, Discover QGIS 3.x, A Workbook for Classroom or Independent Study

Web links and Video Lectures(e-Resources)

1. https://sites.duke.edu/envgis/tutorials/introduction-to-google-earth/
2. https://sites.duke.edu/envgis/tutorials/introduction-to-google-earth/
3. https://www.google.com/earth/outreach/learn/
4. https://learnosm.org/
5. https://documentation.qgis.org/
6. https://www.qgistutorials.com/
7. https://docs.mapbox.com/help/how-mapbox-works/
8. https://wiki.openstreetmap.org/wiki/Main_Page
9. https://elearning.iirs.gov.in/spaceapplications/

Skill development activities suggested

1. Composing maps for Urban planning using GIS (AutoCAD MAP3D, QGIS, Global mapper)
2. Identifying informal settlements and urban growth patterns
3. Analyzing metro rail accessibility
4. Analyzing street connectivity for walkability
5. Dem creation and analysis for Slope and aspects
6. Water stream analysis in forest areas and Micro watershed delineation using3D data through Google earth, Stereo pair imagery
7. Creating buffers for transportation corridors and land use/Landcover for impact assessment
8. Lake encroachment and shrinking analysis using google earth imagery and DEM
9. Land suitability and selection for development on a hilly terrain using DEM and land cover data.

Course outcome (course skill set)

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

Sl. No.	Description	Blooms Level
CO1	Understanding History and basics of mapping and GIS	I
CO2	Field mapping/collecting data using primary and secondary data sources and Mobile application	II
CO3	Visualizing data and making custom maps in 2D & 3D	III
CO4	Using open-source data	IV
CO5	Compose map, Creation of Base maps for site areas in 2D and 3D	V

Program outcome of this course

Sl. No.	Description	POs
1	Understand mapping as a crucial tool in data analysis of Urban scenario	1, 2, 4, 10
2	Creating base maps of study areas upon which further research and analysis can be carried out	1, 2, 3, 4, 9,10
3	Spatial representations of various types of data. Vector, Raster, Attributes, pictorial, annotations, 2D & 3D, related to urban context, including land use/Land cover, transportation corridor, Surface hydrology, Inferencing from datasets	1,2, 3,4, 5,7, 9, 10

Mapping of COs and Pos

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**3**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**3**
CO2	**2**	**-**	**3**	**3**	**-**	**-**	**-**	**-**	**3**	**3**
CO3	**1**	**3**	**3**	**3**	**2**	**-**	**2**	**2**	**1**	**3**
CO4	**2**	**3**	**3**	**2**	**2**	**3**	**-**	**-**	**2**	**2**
CO5	**2**	**2**	**3**	**3**	**3**	**1**	**2**	**2**	**3**	**3**
Average	**2**	**1.8**	**2.4**	**2.4**	**1.4**	**0.8**	**0.8**	**0.8**	**1.8**	**2.8**

Graduate Attribute

Knowledge	Analytical Skills	Application of Research	Application of Latest Technology and Tools	Generate Design and Solutions	Ethics	Societal Concern	Environmental Concern	Collaborative Aptitude	Opportunity for continued Learning
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

Mapping Co-Relations	**Low**	**Medium**	**High**	**No**
	1	**2**	**3**	**-**

COURSE: INFRASTRUCTURE AND TRANSPORTATION PLANNING			
Course code:	MAUDL106	CIE Marks	50
Teaching hours /Week (L:P:SDA)	2:0:2	SEE Marks	50
Total Hours of Pedagogy	3	Total Marks	100
Credits	3	Exam Hours	TW

Objective:

The course is intended as an introduction to the infrastructure needs of an urban environment and fundamental concepts which cater to such needs. It is also intended as an introduction to the issues related to Traffic and Transportation in cities. In addition, it is intended to provide an overview of the Transportation Planning process.

Module-1

Urban Form - Elements of urban form-Growth of Urbanization- Impacts –Urban Design-Transportation and Urban form-Functional Classification of Urban Roads.

Teaching Learning Process	Introduction to the course content through lectures, discussion, debate and case study presentation

Module-2

Urban Infrastructures and city – Concepts, Physical and Social Infrastructure, History of infrastructure, Layout of urban area, siting of services and land use and efficiency. Basics of service network. - Water supply, sewerage/drainage and waste management.

Urban Social infrastructure; Qualitative and Quantitative techniques of assessing requirements, planning amenities.

Teaching Learning Process	Introduction to the course content through lectures and discussion.

Module-3

Smart Cities – Concepts- Goals- Proposals for Indian Cities.-Safe access and Street Design in Indian Cities

Urban Transportation Characteristics- Factors for need of Transportation – Demand- Modes- Urban Transport Scenario in India- Components of urban Transport System-Introduction to general Traffic Engineering.

Teaching Learning Process	Introduction to the course content through lectures, discussion and debate

Module-4

Introduction: Scope of urban transport planning, interdependency of land use and traffic system, system approach to urban transportation Planning- Stages in Transport Planning, Climate change, Transit oriented development.

Transport Demand Modeling – Introduction- Transportation surveys- Definition of study area, zoning, types of surveys.

Teaching Learning Process	Introduction to the course content through lectures, discussion, debate and presentation.

Module-5

Four Step Modeling (FSM)- Trip generation- Trip production- Trip distribution- modal split and Trip assignment.

Public Transportation modes: Systems in India, problems and prospects, present practices in urban transportation. Metro, mono, and high capacity buses. System selection.

Teaching Learning Process	Introduction to the course content through lectures, discussion, debate and presentation.

Assessment Details (CIE and SEE)

The weight age 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, presentation and submission..

Semester End Examination:

Semester End Examination shall be Term work , students are expected compile their work for external evaluation .

Suggested learning resources:

Books:

1. Hamada M .,Critical Urban Infrastructure Handbook © 2015 by Taylor & Francis Group, CRC Press New York
2. Papacostas and Prevendours, Transportation Engineering and Planning, PHI Publication ,2013
3. Kadiyali L.R. Traffic Engineering and Transportation Planning, Khanna Publications.
4. S. Ponnuswamy , Johnson Victor ., Urban Transportation: Planning, Operation and Management , Tata McGraw Hill- New Delhi 2014
5. Safe access manual:safe access to mass transit stations in Indian cities , Bangalore: EMBARQ India.-shah, sonal,sahanagoswami,lubainarangawala, Robin King, Himadri Das, Akhila Suri (2014)
6. ITDP and EPC(2011): Better Streets Better Cities : A Guide to Street Design in Urban India. Institute for Transport and Development Policy
7. Peter Calthorpe.(2011). *Urbanism in the Age of Climate Change*. Island Press. Washington DC
8. Hank Dittmar, Gloria Ohland.(2004). *The New Transit town: Best practices in Transit Oriented Development*. Island Press. Washington DC
9. Stephen Graham, S M (2001). *Splintering Urbanism*, *Networked Infrastructure, Technological Mobilities and the urban condition*. London. Routledge
10. Related reading materials

Web links and Video Lectures (e-Resources)	1. https://www.youtube.com/watch?v=-u8Y13MPLng 2. https://www.youtube.com/watch?v=M-r4DGPeys8&list=PLFGUksPYY9Qp5rLjedeUIwcu13eAeETkh&index=2

Skill development activities suggested

The following skills with respect to transportation planning:

- Critical Reading
- Identifying other relevant perspectives

Course outcome (course skill set)

- At the end of the course the student will be able to: Understanding the fundamental concept/prospects of infrastructure, transportation/planning and its practice in India.

Sl No	Description (refer module outcome)5 module=5outcome	Blooms level
CO1	Understand relation with urbanization and transportation	V
CO2	Development of urban infrastructure	IV
CO3	Concept of smart city and accessibility	IV
CO4	Study of Model- transportation planning and city	III
CO5	Technical aspects of study and practices in urban transportation	V

Program outcome of this course

Sl. No.	Description	POs
1	Able to identify various concepts of infrastructure practices in India	1,2,3
2	Able to relate the scope and parallel discipline that engage in urban transportation study	2,3
3	Able to comprehend the technological advance relates to transportation and concepts in managing urban development	5,3,4,7
4	Application of the study in urban design discipline	8,9,10

Mapping of COs and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	1	-	-	2	2	-	-	1
CO2	2	3	2	-	-	1	2	2	2	2
CO3	1	3	2	3	-	1	2	3	1	2
CO4	-	2	3	2	-	1	2	2	2	3
CO5	-	-	2	2	-	1	1	1	2	2
Average	**1.0**	**2.0**	**2.0**	**1.4**		**1.2**	**1.8**	**1.6**	**1.4**	**2.0**

Graduate attributes

Knowledge	Analytical skills	Application of research	Application of latest technology/tools	Generate design/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	-