Semester- II

HABITAT DESIGN STUDIO-II (HISTORIC URBAN CORE)			
Course Code	MAHD201	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	-

Course Learning objectives:

- Studio aims to sensitize students to the complexities within a Historic urban core/inner city and comprehend the nature of intervention.

Studio Outline

- 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.

Documentation and Analysis may be carried out in groups and interventions to be submitted individually.

Integrated Studio Course (ISC)

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.

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

1. Seminars, Assignments, and Studio Discussions for ISC component.
2. 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. Weightage ratio of 70:30.

Suggested Learning Resources:

Books

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.

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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
CO1	Identify the components of inner-city areas	III
CO2	Analyse the infrastructure provision challenges in the inner-city	IV
CO3	Identify tools for user engagement in inner-city habitat issues	V
CO4	Generate strategies and develop design interventions for identified inner-city district	VI
CO5	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
CO1	3	3	2	1	1	1	2	2	3	2
CO2	3	3	2	2	1	1	2	2	3	2
CO3	2	3	3	2	1	1	2	3	3	2
CO4	2	2	3	3	3	1	3	3	1	2
CO5	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	_

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LANDUSE STRUCTURE AND URBAN MORPHOLOGY			
Course Code	MAHD202	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	03

Course Learning objectives:

- 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

- 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

- Renaissance and the Re-configurement 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

- 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

- 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

- 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)

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.

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. Spiro Kostoff, "City shaped", Bulfinch, Reprint Edition, 1993.
2. SumitaGhosh, "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	-

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URBAN DEVELOPMENT AND ENVIRONMENTAL LAWS			
Course Code	MAHD203	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:

- 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

- 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

- 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

- 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

- 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

- 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)

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.

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 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.

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.

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

Suggested Learning Resources:

Books

1. Herbert Girardet, (1996) "The GAIA Atlas of Cities", new edition, Gaia Books Ltd.
2. C S Yadav, "Urban planning and Policies -Volume 16-A -Part A: Reorientation of Policy Norms", Concept Publishing Company.
3. S. Kostoff. (1991), "The City Shaped. London", Thames and Hudson.
4. Kevin Lynch, (1995) "City sense and city design", The MIT Press.
5. 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. Kulkarni, V., & Ramachandra, T. V. (2006). Environmental Management. Capital Publishing Company.

Web links and Video Lectures (e-Resources):

1. https://onlinecourses.swayam2.ac.in/cec20_ge12/preview
2. https://www.gsd.harvard.edu/course/land-use-and-environmental-law-fall-2021/
3. https://www.youtube.com/watch?v=rZnCnFdbLHg
4. https://www.youtube.com/watch?v=tsmByPHQedA
5. https://www.youtube.com/watch?v=YL_FOI2wuUs

Skill Development Activities Suggested

1. Understanding the National Building Code and its implications on urban habitats.
2. 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
CO1	Familiarisation with the prevailing legal environment.	II
CO2	Orientation to evolve development strategies in the context of legal framework	II
CO3	Comprehend intervention in the context of sensitive ecological settings and the permissible provisions.	IV
CO4	Familiarisation to interpret laws in the context of heritage conservation	II
CO5	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, 1o
3	Establish the correlation between Legislations, Environments and Sustainable Development	1, 3 , 6, 7

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	3	3	-	-	-
CO2	1	3	3	-	-	3	1	-	-	-
CO3	-	-	3	-	-	3	3	3	2	-
CO4	-	-	3	-	–	-	2	-	2	-
CO5	-	-	-	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
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

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

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Housing and Real Estate			
Course Code	MAHD204	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:

- 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

- 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

- 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

- 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

- 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

- Introduction to the tools and concepts for project formulation of green field and redevelopment projects.
- Practical Exercise on:
  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.

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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 MadhukarHiregang,CA VirenderChauhan,CA Sudhir V S and CA RoopaNayak,"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://execed.gsd.harvard.edu/real-estate-development-fundamentals
2. https://www.youtube.com/watch?v=SBZGsjL4uWo
3. https://www.youtube.com/watch?v=0kAhcWemp9M
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.

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Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
CO1	To introduce the basic concepts related to housing	II
CO2	To understand the significance of housing policies and housing finance	V
CO3	To provide an insight into the different aspects of real estate market, planning and management	II
CO4	To give an overview of different stakeholder involved in housing and real estate	IV
CO5	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

	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**	**_**

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INFRASTRUCTURE PLANNING AND MANAGEMENT			
Course Code	MAHD206	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:

- 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

- 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:

- 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

- 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

- 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

- 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:

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-II.
3. CIE marks to be awarded at the end of semester and to be uploaded to VTU portal.

Suggested Learning Resources:

Books

1. Herbert Girardet, (1996) "The GAIA Atlas of Cities", new edition, Gaia Books Ltd.
2. C S Yadav, "Urban planning and Policies -Volume 16-A -Part A: Reorientation of Policy Norms", Concept Publishing Company.
3. S. Kostoff. (1991), "The City Shaped. London", Thames and Hudson.
4. Kevin Lynch, (1995) "City sense and city design", The MIT Press.
5. 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	–

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URBAN ECONOMICS			
Course Code	MAHD215A	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 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

- 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

- 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

- 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

- 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

- 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.

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. 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.

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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	-

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HERITAGE HABITAT: CONSERVATION AND RENEWAL			
Course Code	MAHD215B	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 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

- 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

- 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:
  a) Urban recycling and brown field projects, urban renewal and development strategies for regeneration of inner-city areas.
  b) Best practices in Urban Conservation and Regeneration in India and other countries through case studies.

Module-3

HERITAGE, CULTURE AND BUILT ENVIRONMENT

- Inter-cultural and cross-cultural communication – role of communities and indigenous groups.
- Understanding relationship between culture and globalization.
  a) Built heritage – approach and methods of conservation – concepts of reuse, restore, preserve, retrofit etc.
  b) Historical urban precincts-approach and methods of conservation-regeneration, revival, reimagine etc.

Module-4

POLICIES, LAWS AND CHARTERS

- 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
  a) Financial and Implementation framework for urban conservation and Adaptive Reuse Projects.
  b) Conservation Management, community participation, economic regeneration, upgrading infrastructure, financing and implementation.
  c) Framework for redevelopment and revitalization projects.

Module-5

HERITAGE MANAGEMENT

- 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.

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. 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=k83ZBHdrxtI
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	I,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	_

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SUSTAINABLE URBAN PRACTICES			
Course Code	MAHD215C	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 familiarize students with sustainable design practices in habitat systems.
- To understand Integrated Interdisciplinary Perspectives in holistic development.

MODULE 1

INTRODUCTION TO SUSTAINABLE DEVELOPMENT

- 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

- 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

- 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

- Conservation of ecosystems, green networks, productive urban landscapes.
- Ecological approaches to Urban Development.
- Sustainable design practices.

MODULE 5

SUSTAINABLE TRANSPORTATION SYSTEM

- Transit oriented development, green infrastructure, and green linear systems.
- Study of best practices adopted by cities across the world.

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. Forster O. Ndubisi, The Ecological Design and Planning Reader, Island Press, 2014
2. Joy Sen, Sustainable Urban Planning, Teri Press; 2013
3. Ronald A Altoon and James C Auld, Urban transformation transit-oriented development and the sustainable city, Image Publishing; 2011
4. Steef Buijs, Others ed, Megacities Exploring a Sustainable Future, OlO Publishers; 2010
5. Douglas Farr, Sustainable Urbanism: Urban Design with Nature, Marg Publication, 2007
6. Cedric Pugh, Sustainable Cities in Developing Countries, Earthscan Publications Ltd. ;2005
7. Robrt Riddell, Sustainable Urban Planning Tipping the Balance, Blackwell Publishing; 2004 8. Dominique Gauzin-Muller, Sustainable Architecture and Urbanism, Birkhauser Publishers for Architecture; 2002
9. John Kirkby, & Phil O'Keefe, Sustainable Development, EarthScan Publications Ltd.; 1999 10. Martin Purvis, & Alan Grainger, Exploring Sustainable Development Geographical Perspectives, EarthScan Publications Ltd.; 2005

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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
CO1	Evaluating innovative sustainable practices in habitat systems	IV
CO2	Comprehend the important drivers for sustainable practices to be integrated in the development of habitats.	V
CO3	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
CO1	3	3	1	2	1	3	3	3	3	3
CO2	3	3	3	2	1	3	3	3	3	3
CO3	3	3	3	2	3	3	3	3	3	3
CO4	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
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10

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

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DISASTER MANAGEMENT			
Course Code	MAHD215D	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 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

Overview of Disaster Management:

- 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

Urban Disaster Impact and Mitigation:

- 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

Risk Identification, Assessment and Mitigation Strategies:

- 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

Policies, Frameworks and Community Participation:

- 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

Technology and Agencies in Disaster Management:

- 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.

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. 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
CO1	Awareness of disaster management protocols and information.	I
CO2	Understanding fundamentals of disaster management	II
CO3	Analysing Urban Disaster Impact and Mitigation	IV
CO4	Understanding the utilization of technology and agencies involved in risk management	IV
CO5	Formulating Action plan along with strategies, for mitigating urban disasters	V
CO6	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
CO1	3	1	-	1	1	-	1	2	3	3
CO2	3	1	-	1	-	-	1	3	2	3
CO3	2	3	3	2	2	1	3	3	1	3
CO4	2	1	1	3	-	-	1	2	-	3
CO5	1	2	3	2	3	2	3	3	1	3
CO6	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	_

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