

ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



University of Mysore
(Estd.1916)

**MASTER OF ARCHITECTURE
- (URBAN DESIGN)**

**Choice Based
Credit System
(CBCS)**



UNIVERSITY OF MYSORE
Master of Architecture (Urban Design)

M. Arch (UD)

The Course is Recognized by the “Council of Architecture, New Delhi” (CoA, New Delhi)

Existing Regulations and Syllabus
(POST GRADUATE TWO-YEAR PROGRAMME)
M. Arch (UD)

Under
Choice Based Credit System (CBCS)

PROGRAM OUTCOMES:

- Students are equipped to develop a holistic view of the city as a basis for designing the city and its components in the third dimension.
- Students gain the world-wide knowledge on urban design through research.
- Students contribute to a clearer understanding of cities, particularly of Indian cities, through research, documentation and urban design interventions.
- Students address the various urban design issues through studio exercises, sponsored research and publications in collaboration with outside organizations.

PEDAGOGY:

Masters in Urban Design is a two-year post-graduate programme that provides a thorough understanding of the ways in which city has evolved in response to changing social, political, economic, cultural and disciplinary conditions. The primary goal of this programme is to offer strong professional skills for the development of the cities.

This is a studio-lab intensive programme with an additional commitment to computational skills and methods as well as emerging design paradigms. The programme further aims to produce urban designers who will cultivate the integration of thinking and actively assert the role of urban design in fostering a powerful, diverse and sustainable city.

Curriculum for I-IV Semesters
Master of Architecture
(Urban Design)

Academic year 2017-18

SCHEME OF TEACHING AND EXAMINATION FORM. Arch (Urban Design)

SEMESTER-I

Sl. No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
1	Practicals	Urban Design Studio - I		12		12	50	50	100	12
2	48101	History and Theory of Urban design	3			3	50	50	100	3
3	48102	City Planning Process in India	3			3	50	50	100	3
4	48103	Traffic and Transportation Planning	3			3	50	50	100	3
5	48104	Urban Design Principles and Techniques	2	1		3	100		100	2
6		Electives-I	3			3	50		50	3
		Total				27				26

CHOICE OF ELECTIVES FOR SEMESTER-I

Sl No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
6	48105	New Urbanism	3			3	50		50	3
	48106	Urban Housing	2	1		3	50		50	3
	48107	City building and Place making (Social Theory and Urban Design)	3			3	50		50	3

SEMESTER-II

Sl No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
1	Practicals	Urban Design Studio - II		12		12	50	50	100	12
2	48111	Urban Design Policy and Implementation	3			3	50	50	100	3
3	48112	Landscape design and Urban ecology	3			3	50	50	100	3
4	48113	Contemporary Theories of Urbanism and Architecture	3			3	50	50	100	3
5	48114	Research Methodology	2	1		3	100		100	2
6		Elective -II				2	50		50	2
		Total				26				25

CHOICE OF ELECTIVES FOR SEMESTER -II

Sl No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
6	Practicals	GIS	02			02	50		50	02
	48115	City and art	02			02	50		50	02
	48116	Urban design politics	02			02	50		50	02

SEMESTER-III

Sl No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
1	Practicals	Professional Training	8 weeks in an Architectural & Urban design firm				50	50	100	4
2	Practicals	Urban Design Studio - III		12		12	50	50	100	12
3	48119	Urban Conservation and Renewal	3			3	50	50	100	3
4	48120	Urban Governance and Project Finance	3			3	50	50	100	3
5	Practicals	Thesis Seminar			3	3	100		100	2
		Total				21				24

SEMESTER-IV

SI No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
1	Practicals	Thesis		15		15	50	50	200	15
2	48121	Elective -III	02			02	50		50	02
		Total				17				17

CHOICE OF ELECTIVES FOR SEMESTER IV

SI No	QP Code	Title of the subject	Scheme of Teaching Periods per week				Scheme of Examination			Credits
			Lecture	Studio	Tutorials	Total	Internal	External	Total	
2	48122	Urban Projects and System Management	02			02	50		50	02
	48123	Real estate and land management in urban design	02			02	50		50	02
	48124	Urban form, Climate and Environment	02			02	50		50	02

UDC: Urban Design Core Course, **UDS:** Urban Design Supporting Course, **UDP:** Urban Design Professional Training, **UDE:** Urban Design Elective Course

SEMESTER-I

UDC11	<u>URBAN DESIGN STUDIO – I</u>
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Aim:

The aim of the studio shall be to make students understand the basic vocabulary for examining physical urban form through studio exercises.

Objectives:

- To introduce the student to the realm of urban design by exposing them to the various dimensions of the design process.
- Develop students' ability to identify and analyse urban design issues and problems
- Initiate the students on basic skills to develop urban design scheme in two-dimensional and three-dimensional form.
- To create an understanding of the role of various physical, social, economic and infra structural components and decision making processes.

Outline:

Part I -“Reading an Urban Structure”.

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

Part II- Urban design intervention

It 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.

References:

1. Sendich, Emina, *Planning and Urban Design Standards*, American Planning Association, John Wiley and Sons Inc, New Jersey, 2006.
2. Donald Watson, Alan Plattus, Robert G. Shibley, *Time-saver standards for urban design*, McGraw-Hill, 2003
3. Allan B. Jacobs, *Great Streets*, The MIT Press, 1995
4. Kevin Lynch, *The Image of the City*, M.I.T. Press, 1964
5. Jan Gehl and Birgitte Svarre, *How to Study Public Life*, Island Press, 2013
6. Christopher Alexander, Sara Ishikawa, and Murray Silverstein, *A Pattern Language: Towns, Buildings, Construction*, Oxford University Press, 1976

Websites:

www.urbandesign.org

www.pps.org

Aim:

To introduce the student to the fundamental theories of urban design and to make the students understand the philosophies and basic components of city planning.

Objective:

To impart knowledge of urban form and urban spaces in historical and theoretical terms, in a comprehensive manner.

Outline:

1. **Unit I:** Introduction to urban design – ideology/theory and the various concerns of the Field, Urban Design through history.

2. **Unit II:** Introduction and Study the evolution of city form- morphology (Urban form and Urban Process). Various theoretical views associated with the nature of city form - Normative and positive theories; Cosmic, Machine and Organic Models; Descriptive and functional theories; Alternative theoretical postulations.

3. **Unit III:** Study of the evolution of urban form

a. Chronological – Urban space through history, nature of cities, city models, reasons of transformation in urban form ,The Early Cities, Medieval Towns, Renaissance, Form of modern city; early cities of Capitalism, Modern Movement, Pre-industrial urban form.

- The Industrial revolution, its effect of on European urbanism.
- Concepts of Garden Cities or cities in the garden, in Europe and America, influence on the development of mercantile Colonial Towns in India
- City beautiful movement - Chicago, New Delhi, Canberra, Berlin (Albert Speer)
- Industrial colonization and the introduction of Colonial Institutions in urban India
- CIAM and the Modern Movement, Bauhaus, Corbusier's Radiant City
- Urban renewal and post-war reconstruction, the picturesque city. The role of Geddes, Mumford and Jane Jacobs
- City of the Automobile, American suburbia, Transportation, the building of suburbia, New Town Movement and its influence on post-independent Indian city planning concepts, Cites of theory and sweat equity & highway.

b. 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; Islamic cities in the Middle East)

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

4. **Unit IV:** Understanding Urban Process (rise and fall of cities; disaster; destruction; Haussmanization; incremental changes; urban renewal)

5. **Unit V:** Modern and post-modern urbanist theories (Utopia; Lynch's ideas of good city form; Imageability and Memory, 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)

References:

- 1) Spiro Kostof , *The City Assembled* , Thames and Hudson, London 2005.
- 2) Spiro Kostof , *The City Shaped*, Bulfinch Press, Boston 1993.
- 3) Jon Lang, *Urban Design- A Typology of procedures and Products*, Architectural Press, 2005
- 4) Kevin Lynch, *Good City Form*, MIT Press, London, 1959.
- 5) Edmund Bacon, *Design of Cities*, Thames and Hudson, London 1967
- 6) Jane Jacobs, *The Death and Life of Great American Cities*, Random House, New York 1961
- 7) Alexander, Christopher; Sarah Ishikawa and Murray Silverstein, *A pattern language: Towns, buildings, construction*, New York, Oxford University Press, 1977.

UDC 13	City Planning Process in India
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Aim:

To expose the student to the principles of planning and critically evaluate different planning processes prevalent in India

Objectives:

- 1) To expose students to the process of city planning in India.
- 2) To look at the development control regime used to monitor, aid, manage and design the growth and changes occurring in cities.
- 3) To undertake a critical review of the planning process and development controls in the Indian context.

Outline:

Unit I: Concepts and frame work of Master Plans, Comprehensive Development Plans, Structure Plans and Perspective Plans.

Unit II: The concept of planning legislation in India; review of legislation related to city planning and local Town Planning Acts.

Unit III: Plan making process; delineation of planning area; development of visions and policies, assessment of developmental issues for various sectors such as land use, transportation, environment, urban poor, and urban design among others; projection of requirements, developmental proposals; and delineation of zones.

Unit IV: Land use zones; sub classification, permissible activities, and prohibited activities; appeals, appellat authority and unauthorized developments.

Unit V: Development control tools; TP Schemes and their validity; identification of urban renewal areas; urban renewal process and management; conservation and redevelopment; incentive zoning, TDR and Floating FSI.

Unit VI: Resource mobilization; plan monitoring and review; public participation; implementation mechanisms; and zonal level plans.
7. Critical review of the planning process in India.

References:

1. UDPFI Guidelines, Institute of Town Planners, India, Ministry of Urban Affairs and Employment. Government of India, New Delhi
2. The Karnataka Government Town and Country Planning Act.
3. The Constitution (74th Amendment) Act, 1992.
4. Bureau of Indian Standards. *National Building Code*, 2010.
5. Master Plans of Bangalore, Mysuru, New Delhi, Mumbai and other metropolitan Indian cities.
6. Taylor, John L and Williams, David G. *Urban Planning Practice in Developing Countries*, Pergamon Press, Oxford, 1982.

UDS14	<u>Traffic and Transportation Planning</u>
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Aim:

This course will focus upon the key determining factors that create the reciprocal relationship between land use, population and building densities and transport.

Objectives:

- 1) To introduce the infrastructure needs of an urban environment and fundamental concepts which cater to such needs.
- 2) To introduce the issues related to traffic and transportation in cities.
- 3) To provide an overview of the transportation planning process.

Outline:

Unit I: Overview of transportation systems and modes, design and operating characteristics
Transportation modes: Systems in India, problems and prospects, present practices in urban transportation. Metro, mono, and high capacity buses. System selection. Traffic system, traffic system approach to urban transportation.

Unit II: Introduction to transport planning process and policies. Problem oriented planning and objective laid approach. Urban Transportation surveys: Study area definitions, surveys and their types, sampling of travel methods, Stages in Urban Transportation: Trip generation, trip production, trip distribution, Modal split and trip assignment

Unit III: Use of analytical models for transportation planning- programming and scheduling, processing of travel data, Analysis and interpretation of traffic studies, Forecasting traffic in relation to planned land use.

Unit IV: Scope of urban transport planning, interdependency of land use and Land Use
Transport models: Lowry model, Garin-Lowry Model, applications in India. Public Transport planning policies, Problem oriented planning and objective laid approach. Developing the parking plan

Unit V: Principles of planning and design of road network and engineering classification of roads, intersections and elevated roads. Intersection Design: Elements of intersection

maneuver area, types of inter sections, flyover, grade separators, subways, underpass, and suitability of each type. Rotary and its design, Roundabouts.

Unit VI: Traffic Management- existing organizational and legal framework, traffic and environmental management techniques; Regulatory measures for traffic management Physical methods of traffic control, Signal, control, Review of the existing traffic management schemes in case cities.

References:

1. Kadiyali L.R, *Traffic Engineering and Transport Planning*, Khanna Publications, Delhi, 2016.
2. Dimitriou H.T, *Urban Transport Planning and Developmental Approach*, Routledge, London, 1983.
3. Michael J Bruton, *Introduction to Transportation Planning*, Hutchinson, London, 1985.
4. Black John, *Urban Transport Planning and Design*, Crown Helm Ltd, London.
- 5.C. A. O. Flaherty, *Transport planning and traffic engineering*, John Wiley and sons, 1997

<u>UDS 15</u>	<u>Urban Design Principles and Techniques</u>
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Aim :

To introduce the students to the methods of reading, understanding and representing the physical fabric of a city.

Objective:

- To expose students to the language, terminology and context within which most of the urban issues are couched in literature.
- To develop a basic capacity to critique for urban design and the normative doctrines that produce them, derived from both theory and empirical evidence
- To impart basic graphics and representation techniques for urban design.

Outline:

Unit I: Introduction:

1. Definition and scope of urban design.

Introduction to the process and profession of Urban Design, differences and similarities between urban planning and urban design.

- Basic glossary of urban design terms and terminologies
- Specific graphics and representation techniques for urban design
- Concepts of making a base map, cognitive mapping and layering
- Methods of urban design surveys

Introduction to Public Spaces and Urban Spaces, Ideas of Good Cities, the essential qualities and values an effective public space possess.

Unit II: Historical Analysis of Urban Design

Study of urban form and shape of settlements and their process of formation and transformation. These studies involve the examination of the fundamental geographical reasons for settlement formation, including topography, geology, soils and drainage; the dominant axes of development, including lay lines and vistas of symbolic importance; dominant buildings of historic significance; focal points of activity; movement patterns of ancient origin, including processional routes; changing seats of power and influence; changing economic patterns and flow of land values, the patterns of population intrusion, invasion and succession; Collecting and analyzing a wide range of historical data contained in, for example, institutional, corporate or public records.

Unit III: Perceptual Analysis

Environmental perception, construction of place in terms of place identity, sense of place and placelessness, place differentiation and place theming, human sensory system and perception, various dimensions of perception, Lynch's theory of image of the city.

Unit IV: Permeability Analysis of Urban Design

The number of alternative ways through an environment, move around with greater ease and with more choice of routes, safe use of the public realm, relationship between privacy and accessibility in a given location.

Unit V: Visual Analysis of Urban Design

The visual analysis includes studies of urban space, the treatment of façades, pavement, roofline, street sculpture and analysis of the complexity of visual detail which distinguishes one place from another. The visual analysis has three main parts: a study of three-dimensional public space, a study of the two-dimensional surfaces which enclose public space and a study of the architectural details which give to an area much of its special character. Analysis through Aerial photograph, figure ground analysis, building height study, typological analysis, materials and components analysis, walk through analysis.

Unit VI: Social Analysis:

Overview of cross-cultural influences in city development, City as a human network - social structure and urban form, Social access - territoriality, exclusion and inclusion. Analysis through behavior and activity mapping.

Outcome:

- 1) Students undertake site specific place making design projects at the development and public realm context.
- 2) Students to generate visionary, imaginative and realistic responses through investigation, analysis to make informed design decisions and creative recommendations

Note: An extensive reading list shall be given to the students at the start of the semester.

ELECTIVES

UDE 16	New Urbanism
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Aim: This course offers a closer examination of selected urban design issues in history and in contemporary time. Topics covered include, urban design concepts and models in history and their applications, contemporary city building issues, and, future urban forms. Illustrated lectures will be combined with seminars/ workshops to enable in-depth study of urban design topics in context. The topics will vary from year to year to expose the students to the various dimensions of urban design. Concerned faculty has to provide handouts on the topic.

UDE 16	Urban Housing
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Aim:

The aim of the course is to develop an understanding of the dynamics of traditional and contemporary housing and the emerging housing scenario in India.

Objective:

- Overview of housing scenario in India, types of housing, demand and shortage
- Traditional housing stock, its contemporary condition and transformations
- Rent control laws, subdivision of property and its effect on traditional housing

Unit I: Housing situations: Impacts of industrialization and urbanization, slums and squatter settlements, case studies from India and abroad. Review of different forms of housing globally – particularly with reference to third world countries. Housing need & Demand – Calculation of future need. Housing resources and options available in housing

Unit II: Housing Agencies and their contributions to housing development – HUDCO, State Housing Boards, Housing Co-operatives and Banks. Housing Policies in India and other countries like UK & USA.

Unit III: Socio Economic Aspects Social factors influencing Housing Design, affordability, economic factors and housing concepts. Slum upgrading and sites and services schemes. Self-help housing, integrated slum improvement, slum networking.

Unit IV: Housing for new communities: norms and standard for dwelling, shopping, education, health and recreational facilities. Residential environment: users' satisfaction and behavioral aspects, evaluation of housing development.

Unit V: Housing Design Process Different stages in project development– Layout design including utilities and common facilities – Housing design as a result of environmental aspects, development of technology and community interests. Case studies of Public Sector housing, Government housing, Private and Co-operative housing – their Advantages and disadvantages.

Unit VI: Different types of Housing standards– Methodology of formulating standards – Relevance of standards in Housing Development

Outcome:

To develop skills that enables an urban designer to deal with neighborhood planning and large housing projects. Along with the regular theory classes there will be a studio where the students will individually map, evaluate and analyze the site from the knowledge imparted in the theory classes and develop contextual solutions .

The **focus areas** of site planning studio shall be

- Zoning and Land use planning
- Density distribution
- Open space-built space relationship
- Programme development
- Circulation, services and allocation of infrastructure.

References:

- 1.Rothenburg.J, Galster. George C, Butler. Richard, *The Maze of Urban Housing Market - Theory, Evidence and Policy*, The University of Chicago Press, 1991.
2. Davis. Sam, *The Architecture of Affordable Housing*, University of California Press, 1995.
2. Mumtaz, Babur and Patweikly, *Urban Housing Strategies*; Pitman Publishing, London, 1976.
- 3.Payne, Geoffrey K., *Low Income Housing in the Development World*; John Wiley and Sons, Chichester, 1984.
4. Turner, John F.C., *Housing by people*; Marison Boyars, London, 1976.
5. Martin Evans, *Housing, Climate and comfort*; Architectural Press, London, 1980.
6. Forbes Davidson and Geoff Payne, *Urban Projects Manual*; Liverpool University Press, Liverpool, 1983.
- 7.Kavita Datta and G.A.Jones, *Housing Finance in developing countries*, Routledge, London.
8. Cedric Pugh, *Housing and Urbanization*, Sage Publications, New Delhi.

<u>UDE 18</u>	<u>City Building and Place Making</u>
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Aim:

This course introduces students to the theories, principles, processes, methods and practice of urban design and place making. It also examines how the concept of place making applies to neighborhoods, communities and cities.

Objective:

- 1)To understand the importance of policy, planning, design, and management in place making.
- 2)To explore the theories and models used in conceptualizing and managing the relationship between human activity and the built environment.
- 3)To equip students with the knowledge and the ability to use case studies, teamwork, writing and presentation skills to develop and offer solutions.

4) To comprehend the value of common visions, cultural diversity and community aspirations in the process of design in the creation of high quality places to live, work and play.

Content:

1. Fundamental hypothesis: **the study of building typology in relation to the city** , Concepts of Aldo Rossi
2. **The street, Square, façade & typologies of sections and elevations**, the works of Rob Krier
3. **City as a visual matter, philosophy of perception**, comprehension of the environment through visual examination, Serial vision, place, content, etc based on the concepts of Gordon Cullen. **Perception of movement and clarity/** legibility in the cityscapes, Concepts of Kevin Lynch
4. Pattern language of Christopher Alexander, **City seen as a complex**
5. Lattice and the underlying principles expressed in an **abstract pattern**.
6. Edmund Bacon's work on **city design based on the movement system**
7. "Learning from Las Vegas" tools developed **for analyzing the traditional urban spaces in a new kind of space**

References

- 1) Spiro Kostof , *The City Assembled* , Thames and Hudson, London 2005.
- 2) Spiro Kostof , *The City Shaped*, Bulfinch Press, Boston 1993.
- 3) Edmund Bacon, *Design of Cities*, Thames and Hudson, London 1967
- 4) Gordon Cullen, *The Concise Townscape*, Van Nostrand, Reinhold Co, 1961.

SEMESTER II

<u>UDC 21</u>	<u>URBAN DESIGN STUDIO – II</u>
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Aim:

The studio exercise will focus on analyzing an environmentally sensitive city or heritage belt which is under process of transformation over a period of time triggered by identifiable event or policy and suggest certain intervention measures.

Objective:

- To acquire skills of documentation, analysis and presentation of urban design projects and typological studies.

- To understand the role of various interest groups and stake holders in the realization of an urban design scheme.

Part I -“Understanding and Analyzing the site”.

It will consist of Individual and collaborative work of documenting, analyzing the site by understanding the role of various historical, physical, social, economic and infra structural components and decision making processes.

Part II- Documentation

The project will identify a city to understand the process of documenting the true picture of the area and how it has transformed over a period of time. Historical /Heritage sites, environmentally impacted belts or brown field sites are recommended for the exercise.

Part III- Urban design intervention

It will focus on the goals and objectives of “intervention to improve”. The project will create scenarios which will clearly demonstrate the needs of intervention to improve. The project will end with the redesigning the city considering its rich heritage or ecological qualities.

<u>UDC 22</u>	<u>Urban Design Policy and Implementation</u>
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Aim :

To inform the student about the process of formulation of urban design policies, integration and implementation of the same in city planning.

Objective:

To highlight the importance of integrating the urban design agenda into the city planning Process.

Outline:

1. Role of urban design in city planning; historical overview and case examples of policy; visioning process; urban design plans, policies and developmental strategies.
2. Case studies of impact of development controls and zoning; analysis of urban design issues; current innovations in development regulations; alternative types of zoning.

3. Implementation of urban design plans, policies and concepts – tools and methods; local-level plans; design guidelines; design review and concept of design review boards.
4. Role of Government, private parties and other stakeholders; participatory design.

References:

1. Bureau of Indian Standards. *National Building Code*, 2010.
2. Master Plans of Bangalore, New Delhi, Mumbai and other metropolitan Indian cities.
3. Jacob, Alan. *Making City Planning Work*, American Planning Association, 1980. ISBN: 978-0918286123
4. Barnett, Jonathan. *Introduction to Urban Design*, Icon (Harpe); 1st edition, 1982. ISBN: 978-0064303767.
5. Barnett, Jonathan. *Urban Design as Public Policy*, McGraw-Hill Inc.,US, 1974. ISBN: 978-0070037663.
6. Hall, Tony. *Turning a Town Around: A Proactive Approach to Urban Design*. Oxford, United Kingdom: Blackwell Publishing, 2008. ISBN: 978-1405170239.
7. Steve Tiesdell, David Adams. *Urban Design in the Real Estate Development Process*. Wiley-Blackwell, 2011. ISBN: 978-1405192194
8. Lang, Jon. *Urban Design: A Typology of Procedures and Products*. Oxford, United Kingdom: Architectural Press, 2005. ISBN: 978-0750666282.
9. Gerald E. Frug. *City Making: Building Communities without Building Walls*. Princeton University Press, 1999. ISBN: 978-0691007410.

<u>UDS 23</u>	<u>Landscape design and Urban ecology</u>
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Aim:

To enable the student to understand the principles of site planning, analysis techniques and its application in various types of urban design projects.

Objective:

- 1) Theories and principles of space establishment, site survey, analysis and appraisal. Land form design and grading. allocation of infrastructure (Sewerage, water supply and electricity , Site grading and drainage, Road layout and parking).
- 2) Landscape design exercises to be given on urban vegetation; industrial landscaping; landscaping of residential areas and urban avenues; surface treatments; landscape elements of construction.
- 3) Computer application in landscape.

Outline:

Unit I: Introduction to site analysis with emphasis on study of natural and manmade features of the site. Site Planning: Site, User, Programme and Design. Sensed landscape and its materials, access, earth work and utilities. Field surveys, reading aerial survey, climatic variables. Site Planning strategies and case studies.

Unit II: Landscape design concepts and design of open and public spaces, recreation areas, road side landscapes.

Unit III: Ecology: Basic concepts of ecology, components of environmental planning, use and management of resources; environmental concerns related to development; environmental degradation; pollution control and evaluation of energy resources., spatial

environmental planning. Eco-system and components of ecosystem structure; principles of ecology; physical science; earth science; man-environment interface towards sustainable development.

Unit IV: Concepts and theories in landscape architecture/city planning urban design in the historical perspective, origin of forms, organization of space, relationship of activity with buildings, open space/ built form.

Unit V: Selected case studies of urban landscape and streetscape in relation to the city fabric Contemporary landscape and the emergence of the natural system. and city parks and nature of open space

Unit VI: Water front development – Promenades, Platforms, Steps, Ghats, Pergolas, Lighting, Edge Conditions, Tide Set backs, etc,

Outcome:

To develop skills that enables an urban designer to deal with large sites in a comprehensive manner from ecological considerations to the design of services and related infrastructure. The studio will choose a suitable site in India where the students will individually map, evaluate and analyze the site from the knowledge imparted in the theory classes .

The **focus areas** of site planning studio shall be

- Ecological factors in site evaluation
- Urban vegetation, planning & maintenance
- Open space-built space relationship
- Programme development
- Circulation, services and allocation of infrastructure (Sewerage, water supply and electricity , Site grading and drainage, Road layout and parking)

References:

1. Kevin Lynch, *Good City Form*, MIT Press, Cambridge
2. Kevin Lynch and Gary Hack, *Site Planning*, MIT Press, Cambridge.
3. Peter Jacobs and Douglas Way, *Visual Analysis of Landscape Development*, Harvard Press.
4. Gary.O.Robinette (Ed), *Landscape Planning and Energy Conservation*. Van-Nostrand Reinhold.

<u>UDC 24</u>	<u>Contemporary Theories of Urbanism and Architecture</u>
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Aim:

To expose the students to the current theoretical trends in architecture and urbanism, with focus on Western architecture but with cross reference to Contemporary Indian trends.

Objective:

- The course examines contemporary concerns and emerging theories in the construct of the city.
- The course will critically review philosophies and projections made in urban design, architecture and planning projects and the views of social and political scientists, economists etc. for the future of urbanism and city dynamics.

Outline:

Unit I: Post Modernism and post functionalism. Post script to the modern movement. Semiotics and structuralism. Post structuralism and Deconstruction .

Unit II: Urban theory after Modernism, Contextualism, Main street and beyond. Collage city and towards the contemporary city.

Unit III: School of Venice, territory and architecture, an analogical architecture. Political and ethical agenda, the ethical function of architecture.

Unit IV: Phenomenology and meaning of place, Heidegger's thinking on architecture, a look at the phenomenology of architecture.

Unit V: Critical regionalism, local culture and universal civilization. Tectonic expression. Brief review of the issues of Gender in architecture.

Reference:

1. Kate Nesbit, Theorizing a new agenda for architecture, Princeton Architectural Press, 1996.
2. Michael Hayes, Architecture Theory since 1968, MIT Press, London.
3. Kevin Lynch, Good City Form, MIT Press, London.
4. Bernd Evers, Architectural Theory from Renaissance to the Present, Taschen, Cologne, 2002

<u>UDS 25</u>	<u>Research Methodology</u>
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Aim :

To introduce students to the scientific and quasi scientific approach to research design within the social sciences frame work.

Objective:

- 1) To enable researchers, irrespective of their discipline, in developing the most appropriate methodology for their research studies
- 2) To make them familiar with the art of using different research methods and techniques.

Outline:

Unit I: Introduction to Research methodology: Meaning of Research, Objectives of Research, Types of research, Research approaches, Significance of research, Research methods vrs research methodology, Research Process, Criteria of Good Research , Problems encountered by researchers in India.

Unit II: Defining the research problem: What is research problem? Selecting the problem, Techniques evolved in defining a problem.

Unit III: Research Design: Meaning of research design, need for research design, features of good design, conceptual foundations of research design, different research designs.

Unit IV: Sampling Design: Census and sample survey, steps in sample design, Randomization, sample size and kinds of samples. Collection of data through questionnaire and schedules, Types of surveys, methodology of survey research.

Unit V: Processing and Analysis of Data: Elements and types of Analysis, Statistics in research, Uni-variate, Bi-variate and multi variate analysis of data. Standard deviation, interpretation of data using normal probability curve. Mean, differences, correlation coefficients Simple regression analysis, Multiple correlation and regression, Partial correlation etc. Testing Hypothesis, Chi Square Test, Yates correction.

References:

1. Kothari C R , *Research Methodology, Methods and Techniques*, New age International Publishers
2. Ranjit Kumar, *Research Methodology- A step by step guide for Beginners*. Sage Publications, New Delhi.
3. Fred N. Kerlinger, *Foundations of Behavioural Research*, Holt, Rinehart and Winston Inc, New York.

<u>UDE 26</u>	<u>GIS</u>
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Aim:

This course provides instruction in the application of functions of geographic information systems (GIS) and introduces key spatial analysis concepts.

Objectives:

- 1) To understand GIS as a decision-support tool in urban spatial planning process.
- 2) To introduce basic, practical GIS concepts, techniques and real world applications in spatial planning.

Content:

1. Introduction to the basic concepts of GIS and its data structures.
2. Use of GIS software with spatial data
3. Basic concepts of cartography and the presentation of spatial data
4. Basic concepts in the analysis of spatial data
5. Practical applications of GIS for urban designers.

Outcome:

The course is designed to teach a mix of practical skills and fundamental concepts that urban designers should understand if they intend to use GIS in their work. The first half of the course focuses on basic GIS skills, while the second half focuses on using GIS for analysis.

References:

- 1) Mitchell, A. (1999). *The ESRI guide to GIS analysis: geographic patterns & relationships (Vol. 1)*. Redlands, CA: ESRI.
- 2) Mitchell, A. (2005). *The ESRI guide to GIS analysis: spatial measurements & statistics (Vol. 2)*. CA: ESRI
- 3) Clarke, K.C. (2011). *Getting Started with Geographic Information Systems*. Fifth Edition. Prentice Hall.

Aim:

Sensitizing students about Public Art , its importance in a city and how learning from diverse arts pertaining to cities, would reveal cities in their various aspects.

Objective:

- Students will be able to define and describe public art and analyze its role within a community.
- Students will demonstrate an understanding of best practices when it comes to introducing and engaging a community in redevelopment or a public art project.
- By formulating their own informed opinions, students will be able to compare and write about arts institutions and site-specific projects, artists, and online endeavors that have been successful or unsuccessful in reaching their intended audience.
- Students will be able to speak effectively about how an organization's mission and audience influence decision-making at all levels of an institution.

Content:

Unit I: Public art & urban design: strategies: Regenerating and marketing cities and their 'public' spaces, Designing Cities – Urban Design and Spatial Political Economy.

Unit II: Public art & urban design: meaningful works: Creating Significance through public space, Public art and its history, Approaching the city through its public art.

Unit III: Survey Art in the Public Realm

Public art programs management, management structures to respond to the desire for community inclusion in the decision-making process, relationship between artists, communities and society-at-large within the urban environment.

Unit IV: Historic Context/Redevelopment and Public Space

Transforming a deteriorated district, creating a green space, redeveloping a former restricted-use site, reinvigorating a waterfront area, Effective use of space, How is the public affected by large-scale land transformation, community engagement in the process of redevelopment, gentrification.

Unit V: Art for Social Change/Radical Art

Social change can often be traced back to the single action of one person or one small idea. The impact of radical art, How does it challenge us to think differently about our community?

References:

- 1) Caeiro M (2003) '*Lisbon capital of nothing*', in Miles and Kirkham (2003) pp133-46
- 2) Felshin B, ed. (1995) *But Is It Art?*, Seattle, Bay Press
- 3) Goehler G (2000) '*Constitution and Use of Power*', in Goverde et al (2000) pp41-58
- 4) Goverde H, Cerny P G, Haugaard M and Lentner H, ed.s (2000) *Power in Contemporary Politics*, London, Sage
- 5) Lefebvre H (1991) *The Production of Space*, Oxford, Blackwell
- 6) Lefebvre H (2003) *The Urban Revolution*, Minneapolis, University of Minnesota Press

- 7) Miles M and Kirkham N, ed.s (2002) *Cultures and Settlements*, Bristol, Intellect Books
- 8) Poynton M, ed. (1994) *Art Apart: art institutions and ideology across England and north America*, Manchester, Manchester University Press
- 9) Raymond M (1970) *From Baudelaire to Surrealism*, London, Methuen
- 10) Robinson H, ed. (2001) *Feminism - Art - Theory*, Oxford, Blackwell
- 11) Smith P (1997) *Seurat and the Avant-Garde*, New Haven, Yale
- 12) Taylor B (1994) 'From Penitentiary to Temple of Art: Early Metaphors of Improvement at the Millbank Tate', in Poynton (1994) pp9-32
- 13) Thomson R (1985) *Seurat*, Oxford, Phaidon

UDE 28	Urban design Politics
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Aim:

The course investigates the nature of the relations between built form and political purposes through close examination of a wide variety of situations where public and private sector design commissions and planning processes have been influenced by political pressures.

Objective:

- 1) To understand how public and private developments and city planning processes are driven by political decisions.
- 2) Exploring the political history and how it influences design from various examples.
- 3) Understanding politics in developing public housing and gated communities

Content:

Unit I: Introduction to political science and how political power constructed through space. Gender impacted designs of cities giving examples of Detroit and Disney land.

Unit II: Extreme examples of politically charged environments: Hitler's megalomaniacal plan for Berlin, Mussolini's interventions in and around Rome, as well as designs for new capital cities around the world (Washington, DC, New Delhi, Canberra, Brasília, etc.).

Unit III: Explore less extreme settings for urban design politics for public housing, by focusing on the origins and redevelopment of Indian public housing as well as abroad.

Unit IV: Various cases of public and private developments, design commissions and city planning processes in India, predominantly driven by political decisions.

Unit V: Design politics of "urban resilience": the attempt to rebuild (socially, politically, urbanistically) following sudden disasters.

Outcome:

- The course is programmed as an interactive class where the student has to do required amount of reading and do at least one short presentation.
- A short paper that uses selected readings to extract the "design politics" of a place or project;
- A term paper on a topic analyzing both the design and political history of an urban design intervention, to be presented during the final sessions of the class.

References:

- 1) Edelman, Murray. *"Architecture, Spaces, and Social Order."* In *From Art to Politics: How Artistic Creations Shape Political Conceptions*. Chicago, IL: University of Chicago Press, 1995, pp. 73-90. ISBN: 9780226184005.
- 2) Spain, Daphne. "Space and Status." In *Gendered Spaces*. Chapel Hill, NC: University of North Carolina Press, 1992, pp. 1-29. ISBN: 9780807843574.
- 3) Fainstein, Susan, and Lisa J. Servon, eds. *"Introduction: The Intersection Between Planning and Gender."* In *Gender and Planning: A Reader*. New Brunswick, NJ: Rutgers University Press, 2005, pp. 1-12. ISBN: 9780813534992
- 4) Jarvis, Helen, with Paula Kantor, and Jonathan Cloke. *"Homes, Jobs, Communities and Networks."* In *Cities and Gender*. New York, NY: Routledge, 2009, pp. 186-215. ISBN: 9780415415705.
- 5) Logan, John R., and Harvey L. Molotch. *"The Social Construction of Cities."* In *Urban Fortunes: The Political Economy of Place*. Berkeley, CA: University of California Press, 1987, pp. 1-12. ISBN: 9780520055773.
- 6) Painter, Borden. *"Mussolini's Obsession With Rome," "Celebration and Construction, 1932-1934,"* and *"Architecture, Propaganda, and the Fascist Revolution."* In *Mussolini's Rome: Rebuilding the Eternal City*. New York, NY: Palgrave Macmillan, 2007, pp. 1-38, and 59-90. ISBN: 9781403980021.
- 7) Ladd, Brian. *"Nazi Berlin," "Divided Berlin,"* and *"Capital of the New Germany."* In *The Ghosts of Berlin: Confronting German History in the Urban Landscape*. Chicago, IL: University of Chicago Press, 1997, pp. 127-235. ISBN: 9780226467610
- 8) Wise, Michael Z. *"Master Plan for a Government District," "Choosing a Chancellery,"* and *"Norman Foster's Reichstag: Illuminating Shadows of the Past."* In *Capita*

SEMESTER-III

UDP 31	Professional Training
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Aim:

An exposure to the various aspect of professional practice in an Architectural/ Urban Design firm or any planning organization.

Objective:

1. An understanding of general functioning of an office.
2. Exposure to various scales of Urban Design Projects from master planning to sector/ neighborhood layout and gain knowledge on stipulations, rules & regulations.
3. Exposure to Research Projects, Documentation, various types of Survey etc.

Outline:

The student is expected to work in an architectural/Urban design firm or Planning Organizations handling the following types of projects;

- a) Large scale architectural projects like college/university campus, industrial Estates, commercial complexes, housing complexes, entertainment complexes etc. involving a number of Blocks, site planning and landscaping,
- b) Architectural projects with focus on heritage conservation in an urban area.
- c) Urban infill projects
- d) Revitalization projects of decaying parts of the city.

Outcome:

For the viva examination, the following items need to be presented. A student will be required to submit a performance report from the firm/organization under whom training is undertaken as well as a detailed report on the work carried out by him during the training.

- a) Statement indicating the various types of works done by the student,
- b) Drawings related to projects with which the student was associated
- c) Photographs of project sites and
- d) Any other material in support of student's involvement in the work.

Note: The eight weeks (56 days) should immediately precede the commencement of regular course work of third semester.

UDC 32	Urban Design Studio -III
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Aim:

The studio exercise will focus on designing a larger scale new town which is integrated with the main city. The exercise also involves developing policy and guidelines for the new development.

Objective:

- To acquire skills of Master planning of larger scale new towns using Planning guidelines and various building codes.
- To understand the role of various interest groups and stake holders in the realization of an urban design scheme and develop exclusive policies and guidelines for the new development.

Conducted over one semester, Studio III normally consists of urban design projects with progressively larger scale and complexity, which aims to: (a) enhance and further develop the students' analytical and design ability for handling real-life urban development, renewal and/or re-development projects; (b) prepare the students for conducting more advanced studies leading to large, comprehensive urban design schemes. The project shall end in a Master planning of a new town integrated with the main city.

Project proposals shall be divided into two phases in which a policy and guideline evolution shall follow the actual design project. The project would also involve a) identification of various stake holders and their role in policy level guidelines, and b) working and illustrating the economic feasibility and infrastructure development needed for implementation of proposal.

References:

- 1) Sendich, Emina, *Planning and Urban Design Standards*; American Planning Association, John Wiley and Sons Inc, New Jersey, 2006.

UDC 33 Urban Conservation and Renewal
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Aim:

To introduce students urban conservation and their applications in professional practice through interventions.

Objective:

- To sensitize students on complexity of issues prevalent in historic urban areas
- To equip them to address these issues sensibly and with responsibility.

Outline:

Unit-I: Introduction to conservation of historic zones, inner city areas and world heritage sites. Concepts of conservation in India and other countries. Case studies of urban renewal, adaptive reuse and Brown Field projects in India and abroad.

Unit-II: Heritage tourism and conservation, Socio-Economic development, tourism infrastructure development, and role of urban development.

Unit-III: Institutional aspects of conservation- Charters, World heritage legislation and sites, Conservation Acts and legislation and available institutional frame work of conservation in India, Importance of Charters, Archaeological Acts, Conservation Acts and Legislation

Unit-IV: Conservation area practice, adaptive reuse, up gradation programs in old areas, infill design and regeneration of inner city areas, Development strategies for regeneration of inner city areas, recycling and renewal.

Unit-V: Conservation management, community participation, economic regeneration, financing and implementation of frame work for redevelopment and revitalization projects. Infrastructure up gradation, economic regeneration, financing and management of urban renewal schemes.

Unit-VI: Principles of conservation and successful practices in conservation in India and abroad. Case studies in India and abroad to illustrate the above mentioned concepts and approaches.

References:

1. Cohen Nahoum, *Urban Conservation*; The MIT Press February 5, 1999
2. Bandarin Francesco, *The historic urban landscape: Managing Heritage in an Urban Century*; Wiley, 2012.
3. Kong Lily, *Conserving the past, creating the future: Urban Heritage in Singapore*; URA, 2011.
4. Feilden, Bernard M. and Jokilehto, Jukka, *Management Guidelines for World Cultural Heritage Sites. Rome: ICCROM, 1998.*
5. Tandon, Rajeshwari, *A Case for National Policy for Heritage Conservation & Management. New Delhi: INTACH, August 2002.*
6. Feilden, Bernard., *Guidelines for Conservation: A Technical Manual. New Delhi: Indian National Trust for Art and Cultural Heritage (INTACH), 1989.*
7. Indian National Trust for Art and Cultural Heritage (INTACH), Architectural Heritage Division, New Delhi. *Conserving the Heritage of Our Historic Cities: Pre Seminar Working Document. New Delhi: INTACH, 1999.*
8. Bisht, A.S., et al., *Conservation of Cultural Property in India. Agam Kala Prakashan, Delhi, 2000.*
9. Picard, Gilbert Charles., *Encyclopedia of Archeology. Chancellor Press, London, 1983.*

UDC 34	Urban Governance and Project Finance
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Aim:

Introduction to the mechanism of governance and fiscal foundations of urban development.

Objective:

1. To sensitize students about the concepts, principles and structure of urban governance.
2. To equip them with an understanding of Participatory governance, Finance mechanisms, revenue generation and budgeting of urban projects, project cycle, identification, selection, preparation, appraisal, monitoring and evaluation.

Outline:

Unit-I: Basic concepts of urban governance and definitions. Principles of governance of urban areas. Local administration, Central and State system of local administration. Structure of local bodies and their role in urban governance, plan making and implementation. Recent amendments to constitution and their implication on governance. Concepts of capacity building and related issues of development of man power.

Unit-II: People's participation- theories, concepts and methods. Participatory governance meaning, processes and methods. Role of people's participation in plan making. People, NGO and civil society and urban development.

Unit-III: The economics of geographical concentration -urbanization, history of urbanization, agglomeration economics, and simple theory of inter urban location, location decision of household.

Unit-IV: Finance mechanisms of local administration. Various forms of revenue generation and budgeting. Innovations in methods of revenue generation.

Unit-V:Types of urban projects, project cycle, identification, selection, preparation, appraisal, monitoring and evaluation.

References:

1. Maria Pinto, *Metropolitan City Governance in India*; Sage Publications, New Delhi.
2. John Abbott, *Sharing the City: Community participation in urban Management*;
3. Routledge, Abingdon, 1996.
4. Jain R.B. *Public Administration in India, 21st Century challenges for Good Governance*; Deep and Deep Publications Pvt. Ltd, New Delhi.
5. Michael Bamarger and Eleanor Hewitt, *Monitoring and Evaluating Urbandevelopment Programmes: A hand book for program managers*. The World Bank,1988

UDC 35 Urban Design Thesis Seminar

Aim:

Prepare students to arrive at a conceptual framework for the Thesis.

Objective:

To serve as a forum to discover, frame and develop Thesis proposal.

Outline:

1. It is intended to help students to arrive at a conceptual frame work for the Thesis in the IV semester.
2. The final product of the Seminar shall be a proposal which will describe in detail the Thesis framework including literature review, objectives, and methodology.
3. The subject shall be run on a seminar format with presentation from students on issues related to their choice of Thesis topic.

SEMESTER-IV

UDC 41	Urban Design Thesis
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Aim:

The aim is to synthesize curriculum, professional experience and contextual application to come up with a well-argued answer to the problem statement in the form of a design proposal.

Objective:

1. To make students aware of the various stages of preparing Urban design proposal.
2. Identifying current urban issues of Indian cities
3. To make students explore the different approaches to tackle the various issues and enquiry with respect to Indian cities and context

Outline:

The Thesis need to have two distinct stages. The first stage should be a detailed scholarly research on an issue (or set of issues) which has a bearing on urban development or a project with a clearly demonstrated methodology. The second stage generate design proposals and solutions to those identified urban design issues in a variety of urban settings; and demonstrate an ability to critique urban design propositions. Students can explore the following areas:

1. Large scale projects like college/university campus, industrial Estates, commercial complexes, housing complexes, entertainment complexes etc. involving a number of Blocks, site planning and landscaping,
2. Projects with focus on heritage conservation in an urban area.
3. Urban infill projects
4. Revitalization projects of decaying parts of the city.
5. Water front developments

UDE 42	Urban Projects and System management
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Aim:

Introduction to large urban design and development projects and their management principles in India.

Objective:

1. To teach the importance of project planning and its role in management
2. To educate the students of the various methodologies, policies and financial frameworks

Outline:

Unit-I: Introduction to project planning, theories, concepts and management, Overview of the various methodologies of planning, Project formulation, definition, Norms, standards, aspects and methods of project appraisal.

Unit-II: Concepts of Project management, systems, frameworks and techniques

Unit-III: Implementation strategies, scheduling, activities, progress reviews, corrective actions etc

Unit-IV: Economic and financial feasibility concepts and methods, Project funding, economic feasibility and methods of recovery, Mandatory legal and environmental approvals

Unit-V: Special projects such as Special economic zones, export processing zones, townships etc. Case studies of successful projects and planning schemes are encouraged to be used as learning models.

1. John G. Schoon, *Transportation Systems and Service Policy: A Project-Based Introduction*; Springer science +Business Media, B.V
2. *Water Sensitive Urban Design*; Book 2, Planning and Management
3. Antti Ahlava, Harry Edelman, *Urban Design Management: A Guide to Good Practice*; Taylor and Francis,2008
4. Hiroshi Kishida, Morio Udsuki, John Blakeney, *Urban Development Strategy and Project Management: Challenge of Minato Mirai 21*; Hiroshi Kishida,2011
5. Richard Lambeck, John Eschemuller, *Urban Construction Project Management*; McGraw-Hill Construction Series

UDE 43	Real Estate and Land management in Urban Design
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Aim:

Study the main economic forces that lead to the existence of cities and regional agglomeration.

Objective:

1. Discuss the problems in measuring these urban characteristics, the methodologies to do it, as well as the design of optimal urban policy.
2. Study the economic theory and evidence on the internal structure of cities together with the urban and housing policies that can enhance urban living

Outline:

Unit-I: Real Estate Development & Project Financing

Fundamental Concepts and Techniques, recognizing institutional and entrepreneurial elements, issues encountered in various phases of development like site evaluation and land procurement, development team assembly, market study and development scheme, project feasibility , development financing, Asset disposal and redevelopment options, Analysis of development sites and case studies, integrated case study on a specific development project, which requires reviewing, analyzing, and resolving the problems or strategic issues.

Unit-II: Urban Policy and Real Estate Markets

Impact of Government regulations and Public policies on real estate markets, Location and rents: the indifference principle, Submarkets and land use segregation, community and neighborhood dynamics, degeneration and renewal in urban dynamics, private public participation and government policies on public and private housing.

Unit-III: Office Location: Edge Cities; The office market and the labor market, Theories of multiple centered cities, Agglomeration and clustering, commercial land market.

Unit-IV: Retail Development; Retail travel patterns and the distribution of stores, Pricing and spatial competition, Shopping centers and store clustering.

Unit-V: Local Government and Land Markets; Property taxes, public expenditure, and local services, Community choice, "capitalization", and income segregation, the fiscal incentives for land use regulation.

References:

1. Arnott, R., ed., *Regional and Urban Economics, Volume 1-2*; Harwood Academic Publishers, 1996
2. Fujita, M., *Urban Economic Theory: Land Use and City Size*; Cambridge University Press, 1989.
3. Fujita, M., Thisse, J.F., *Economics of Agglomeration*, Cambridge University Press, 2002.
4. Papageorgiou, Y., Pines, D., *An Essay on Urban Economic Theory*, Springer, 1999.
5. Tolley, G., Diamond, D. (eds.), *The Economics of Urban Amenities*, Academic Press, 1982.
6. *Handbook of Regional and Urban Economics*, Volume 1-4.
7. *Barron's real estate handbook V edition*; Haupauge, NY, Baron, 2001

UDE 44 Urban Form, Climate and Environment

Aim:

The course will provide practical knowledge and skills in the development of designs supporting sustainability in the urban built environment. The main goal is to gain knowledge and understanding of the design challenges involved in creating a more ecologically based city considering natural and built elements in the design process. The course will contribute to knowledge and skills about sustainable urban development in a changing built environment. Hereby the students obtain competencies in engineering solutions to guide the city through a sustainable transformation.

Objective:

1. To make students familiar to the dynamics of the urban climate and its effects on the built environment.
2. Acquire knowledge on potential resources in the contemporary built environment for finding sustainable engineering and design solutions.

Outline:

Unit-I: Introduction to various natural sources of energy. causes, development, and effects of climate change from global to local scale, the transformation of the built urban environment, techniques for sustainable development, densification, climate adaptation and social inclusivity.

Unit-II: Climate and Built environment: Natural-scientific principles of energy and environmental processes. Kinetic and potential energy; the First and Second Laws of thermodynamics; heat transfer including radiation, conduction and convection. Street orientation, street canyon aspect ratio and sky view factor. The scientific principles governing geothermal and solar energy.

Unit-III: Fundamentals of wind movement and prevalent wind characteristics, Coriolis force, Windrose diagrams the scientific principles governing wind, Effect of Topography on Wind patterns, Ventilation and airflow principles, Windbreak, Airflow outside buildings, the relationship between environmental factors such as wind, sun and the urban form.

Unit-III: Fossil Fuels: The geological origins of fossil fuels and their uneven global distribution and depletion rates; Social and environmental consequences of fossil fuels, including the greenhouse effect and global warming, acid rain; the hazards and disposal of radioactive wastes. The scientific principles governing biomass and other sustainable form of energy and their implementation in city level.

Unit-V: Simulating and modeling Wind flows and solar radiation-Exposure to various energy simulation software in urban context. Create design proposals and experiments applying new information technologies and software for energy simulations.

References:

1. Kenneth S. Deffeyes ; *Hubbert's Peak: The Impending World Oil Shortage*, Princeton, Princeton NJ, 2001.
2. David Goodstein;*Out of Gas: The End of the Age of Oil*, Norton, NY, 2004.
3. Hinrichs & Kleinbach; *Energy: Its Use and the Environment*, Fourth edition, Thompson Learning, 2005.
4. City And Wind ; *Climate As An Architectural Instrument*,Mareike Krautheim
5. OH Koenigsberger and others, *Manual of Tropical housing and building, Climatic design*; Universities press (India) Pvt Ltd.2014.