

**AFFILIATED INSTITUTIONS
ANNA UNIVERSITY, CHENNAI
REGULATIONS -2013
M. ARCH (FULL TIME)**

I TO IV SEMESTERS OF CURRICULA AND SYLLABI

SEMESTER I

SL. NO.	COURSE CODE	COURSE TITLE	L	T	P/S	C
1.	MH7101	Contemporary Processes in Architectural Design I	3	0	0	3
2.	MH7102	Urban Conservation and Practice	2	0	2	3
3.	MH7103	Traditional and Contemporary Landscapes	3	0	0	3
4.	MH7111	Sustainable and Green Building Design	2	0	6	5
5.	MH7112	Urban Design Studio	2	0	6	5
TOTAL			12	0	14	19
SEMESTER II						
6.	MH7201	Contemporary Processes in Architectural Design II	3	0	0	3
7.	MH7202	Performance Evaluation of Buildings	2	0	2	3
8.	MH7203	Services in High Rise Buildings	3	0	0	3
9.		Elective I	3	0	0	3
10.		Elective II	3	0	0	3
11.	MH7211	Advanced Architectural Design Studio I	0	0	12	6
TOTAL			14	0	14	21
SEMESTER III						
12.	MH7301	Emerging Practices in Housing	2	0	2	3
13.	MH7302	Research Methodologies in Architecture	3	0	0	3
14.		Elective III	3	0	0	3
15.		Elective IV	3	0	0	3
16.	MH7311	Dissertation	0	0	6	3
17.	MH7312	Advanced Architectural Design Studio II	0	0	12	6
TOTAL			11	0	20	21

SEMESTER IV						
18.	MH7401	Building Information Modeling	0	0	6	3
19.	MH7411	Thesis	0	0	22	11
TOTAL			0	0	28	14
Total no of credits required for the award of the degree			75			

LIST OF ELECTIVES

SL. NO.	COURSE CODE	COURSE TITLE	L	T	P/S	C
Elective I , II						
20.	MH7001	Building Management and Control Systems	3	0	0	3
21.	MH7002	Appropriate Technologies and Sustainable Construction	3	0	0	3
22.	MH7003	Architecture and Critical Theory	3	0	0	3
23.	MH7004	GIS Modeling in Urban Planning	3	0	0	3
24.	MH7005	Anthropology and Architecture	3	0	0	3
Elective III , IV						
25.	MH7006	Material Conservation	3	0	0	3
26.	MH7007	Landscape Ecology and Planning	3	0	0	3
27.	MH7008	Sustainability and Energy Conservation in Landscape Architecture	3	0	0	3
28.	MH7009	Urban Landscape Design	3	0	0	3
29.	MH7010	Web Design and Portfolio Production	0	0	6	3
L- Lecture T- Tutorial P- Practical / S- Studio C- Credits						

OBJECTIVES:

- To investigate the contemporary theories of media and their influence on the perception of space and architecture.
- To provide an overview of various contemporary design processes and its relation to computation.

UNIT I INTRODUCTION**6**

Investigation of contemporary theories of media and their influence on the perception of space and architecture. Technology and Art – Technology and Architecture – Technology as Rhetoric – Digital Technology and Architecture

UNIT II ASPECT OF DIGITAL ARCHITECTURE**9**

Aspects of Digital Architecture – Design and Computation – Difference between Digital Process and Non-Digital Process – Architecture and Cyber Space – Qualities of the new space – Issues of Aesthetics and Authorship of Design – Increased Automatism and its influence on Architectural Form and Space

UNIT III CONTEMPORARY PROCESS**12**

Overview of various Contemporary design process and its relation to computation: Diagrams – Diagrammatic Reasoning – Diagrams and Design Process – Animation and Design – Digital Hybrid Design Protocols – Concept of Emergence - Introduction to Cellular Automata and Architectural applications – Genetic algorithms and Design Computation

UNIT IV GEOMETRIES AND SURFACES**12**

Fractal Geometry and their properties – Architectural applications - Works of Zvi Hecker-- Shape Grammar - Shapes, rules and Label - Shape Grammar as analytical and synthetic tools-Combining Shape grammar and Genetic algorithm to optimize architectural solutions - Hyper Surface-- Introduction to Hyper surface and concepts of Liquid architecture.

UNIT V CASE STUDIES**6**

Case studies- Study, understanding and analysis of known examples at the national and international levels which demonstrates the contemporary theories of media and their influence on the perception of space and architecture, contemporary design processes and its relation to computation.

TOTAL:45 PERIODS**OUTCOMES:**

- Understanding of the effect of contemporary theories of media on contemporary architectural design.
- Understanding of various contemporary design process and their relation to computation

REFERENCES:

1. Peter Eisenmann, Diagram: An Original Scene of Writing, Diagram Diaries
2. MOVE, UN Studio
3. Grey Lynn, The Folded, The Pliant and The Supple, Animate form
4. Contemporary Techniques in Architecture, Halsted Press, 2002
5. Ali Rahim, Contemporary Process in Architecture, John Wiley & Sons, 2000
6. Walter Benjamin, Practices of Art in the Age of Mechanical Reproduction Colin press, 1977
7. Work of Architecture in the Age of Mechanical Reproduction, Differences MIT press, 1997.
8. William J Mitchell, the Logic of Architecture: Design, Computation and Cognition. MIT Press, Cambridge, 1995
9. Marcos Novak, invisible Architecture: An Installation for the Greek Pavilion, Venice Biennale, 2000.

OBJECTIVES:

- To introduce to the students the idea of conservation as enhancing quality of life, as effective planning strategy, as means of particularization of place and as a way to address issues of memory and identity.
- To introduce the students to issues and practices of urban conservation at various levels and scales.
- To give an overview of current status of conservation in India.

UNIT I INTRODUCTION TO CONSERVATION 15

Understanding Heritage. Types of Heritage. Heritage conservation – Need, Debate and purpose. Defining Conservation, Preservation and Adaptive reuse. Distinction between Architectural and Urban Conservation. International agencies like ICCROM, UNESCO AND their role in Conservation.

UNIT II CONSERVATION IN INDIA 15

Museum conservation – monument conservation and the role of Archeological Survey of India – role of INTACH – Central and state government policies and legislations – inventories and projects – select case studies – craft Issues of conservation –conservation project management.

UNIT III CONSERVATION PRACTICE 15

Listing of monuments – documentation of historic structures – assessing architectural character – historic report – guidelines for preservation, rehabilitation and adaptive re-use of historic structures – seismic retrofit and disabled access /services additions to historic buildings – heritage site management.

UNIT IV URBAN CONSERVATION 15

Over view of urban history of India and Tamil Nadu – understanding the character and issues of historic cities – select case studies of sites like Thanjavur, Kumbakonam, Kanchipuram, Chettinad – historic districts and heritage precincts.

UNIT V CONSERVATION AND URBAN PLANNING 15

Norms for conservation of heritage buildings and sites as part of Development Regulations - Conservation as a planning tool – financial incentives and planning tools such as TDR, (transferable development right) – Urban conservation and heritage tourism.

TOTAL :60 PERIODS**OUTCOMES:**

- The students would gain an understanding of the need and benefits of urban conservation.
- The students would be sensitised as well as informed to carry forth this understanding in the realm of practice/ research.

REFERENCES:

1. Donald Appleyard, The Conservation of European Cities, M.I.T. Press, Massachusetts.
2. James M. Fitch, Historic Preservation: Curatorial Management of the Built World by University Press of Virginia; Reprint edition (April 1, 1990)
3. A Richer Heritage: Historic Preservation in the Twenty – First Century by Robert E. Stipe.
4. Conservation Manual, Bernard Fielden
5. Bernard Feilden, Conservation of Historic Buildings, 2nd Edition, Butterworth, 1994.
6. B.K. Singh, State and Culture, Oxford, New Delhi.
7. A.G.K. Memon ed. Conservation of Immovable Sites, INTACH Publication, N.Delhi Seminar Issue on Urban Conservation.
8. Christopher Brereton, The repair of Historic Buildings. Advice on principles and methods; English Heritage 1991.

OBJECTIVES:

- To study the social and cultural influences on traditional landscapes through analysis of form and space, siting principles of each period with examples.
- To study contemporary landscape and the manifestation in the western and Indian context.

UNIT I EASTERN TRADITIONS AND ISLAMIC LANDSCAPES 15

Early traditions and beliefs about landscape and environment in east. Ancient Indian traditions – Vedic, Jainism, Buddhism and later Hindu movements. Symbolic meanings and sacred value of natural landscapes.

Transfer of concepts through Buddhism to China – Chinese landscape development – gardens of China – Pre Buddhist Japanese landscapes – impact of China on Japanese gardens – Japanese gardens.

Nomadic culture of central Asia – advent of Islam – concept of Paradise as a garden – spread of Islamic traditions to the West and East. Eastern expression of Islam – Samarkhand and Mughul India – Tomb and pleasure garden – Moghul concepts of site planning. Western expression of Islam – Spain Alhambra and Generalife, Granada.

UNIT II RENAISSANCE AND THE EVOLUTION OF NEW THOUGHTS 6

Development of the enclosed garden in the Middle ages. Renaissance – Italy, France and England, Romanticism. Influences and linkages across cultures. Study of the western landscapes till the nineteenth century.

UNIT III THE EVOLUTION OF THE MODERN LANDSCAPE 15

Industrialization and urbanization – impacts and development of the concept of public open spaces, open space development in new towns, parks movement.

Open space development and its urban design and planning context, Early industrial towns and the garden city movement. Public park as a major component of urban landscape, the works of F.L.Olmstead, and other pioneers. Open space development and Close conceptual relationship between Town planning, urban design and landscape architecture. Examples.

UNIT IV THE MODERN MOVEMENT, CONTEMPORARY CONCEPTS AND CONCERNS 9

Changing concepts of space and the relationship of architecture to landscape. Study of selected works of modern architects and landscape architects. Postwar development in Europe. The influence of Ian Mcharg on Landscape architecture. The works of Jellicoe, Burle Marx and others.

Concept of sustainable landscape development, Cultural landscapes their definition, identification, characteristics, policies, Artistic sensibility in landscape architecture and land art, New development in urban Landscape design.

UNIT V INDIAN CONTEXT 6

Issues in contemporary India, Analysis and understanding of philosophies of contemporary landscape works in India, case studies.

TOTAL : 45 PERIODS**OUTCOMES:**

- Relationship between culture and Landscape design.
- Perception of open spaces in different cultures.

REFERENCES :

1. Geoffrey and Susan Jellicoe, The landscape of Man, Thames & Hudson Publication, 1995
2. Robert Holden, New landscape Design, Lawrence king publishing, UK, 2003
3. Penelope Hill, Contemporary history of garden design, Birkhauser publishers, 2004
4. Elizabeth Barlow Rogers, Landscape Design – A Cultural &Architectural History, Hary & Abram inc. publishers, 2001.
5. Phillip Pregill & Nancy Volkman, Landscapes in History, Van Nostrand publishers, 1993.
6. Jonas Lehrman, Earthly Paradise- Garden and courtyard in Islam, Thames and Hudson,1980.
7. G.B.Tobey, A history of American Landscape architecture, American elsevier Publishing Co.,NY, 1973.
8. Pieluigi Nicholin, Francesco Repishti, Dictionary of today's landscape designers, Skira Editores P.A, 2003.

MH7111 SUSTAINABLE AND GREEN BUILDING DESIGN L T P/S C
2 0 6 5

OBJECTIVES:

- To sensitize the students to the various aspects of sustainable and green building design in the context of global warming and climate change
- To study the building material for its impact on environment.
- To expose the students to green rated buildings.

UNIT I INTRODUCTION 15

Attitudes to architecture: a historical perspective- General premises and strategies for sustainable and green design- objectives and basis- Eco-mimicry as a design tool based on ecosystem analogy- theoretical basis for a sustainable and eco friendly design.

UNIT II ECO HOUSE 30

The form of the house: the building as an analogy- design from first principles: conserving energy; working with climate: passive solar design; minimizing new resources; respect for users; respect for site and holism- photovoltaics and solar hot water systems; water usage; small scale wind systems and hydro power; Case studies- Studio project on design of eco houses: context specific.

UNIT III ENVIRONMENTAL IMPACT OF BUILDING MATERIALS 15

Measuring the impact of building materials- calculating embodied energy- recycling and embodied energy- processing and embodied energy- time and embodied energy- embodied energy of different building materials- low energy building and masonry materials- life cycle analysis- Case studies and analysis.

UNIT IV GREEN CONSTRUCTION AND ENVIRONMENTAL QUALITY 15

Sustainable architecture and Green Building: definition- Green building Evaluation Systems; LEED Certification; Green Globe Certification; Case studies which look at the environmental approach-renewable energy- controlling the water cycle- impact of materials on the environment – optimizing construction- site management- environmental management of buildings.

UNIT V SUSTAINABLE AND GREEN BUILDING DESIGN STUDIO 30

This studio will explore collaborative learning to explore, investigate and apply various parameters of sustainability for design development of projected building/ urban scenarios

TOTAL: 120 PERIODS

OUTCOMES:

- An understanding on sustainability
- Knowledge on renewable energy and energy conservation through material usage.
- A through understanding on designing green buildings.

REFERENCES:

1. Ken Yeang; Eco design - A Manual for Ecological design, Wiley- Academy; 2006
2. Sue Roaf et al; Ecohouse: A design Guide; Elsevier Architectural Press; 2007
3. Thomas E Glavinich; Green Building Construction; Wiley; 2008
4. Brenda and Robert Vale; Green Architecture- Design for a Sustainable Future; Thames and Hudson; 1996.
5. Daniel Vallero and Chris Brasier; Sustainable Design- The science of sustainability and Green Engineering; Wiley; 2008

MH7112**URBAN DESIGN STUDIO****L T P/S C****2 0 6 5****OBJECTIVES:**

- To introduce and identify the issues/ aspects of contemporary urban form through study of history of urbanism, contemporary urban theories, urbanism and urban design precedents.
- To intervene through design, addressing the effects of some of these aspects/ issues

UNIT I INTRODUCTION**25**

Introduction to origin and evolution of cities and urbanism- historic review of the development of the urban design discipline and principles- introduction to various issues and aspects that impinge on the urban condition today such as globalisation, digital revolution, contemporary processes, sustainability, splintering urbanism through changes in information and communication networks and transportation.

UNIT II READING THE URBAN FABRIC**20**

Introduction to different ways of reading of the urban fabric- ways of interpreting the city such as type, phenomenology, etc.,- tools of mapping

UNIT III SUSTAINABLE DEVELOPMENT**25**

Sustainable development– Sustainable Cities Program - Revitalization of brown field sites- Transit Metropolis- Case Studies

UNIT IV RESTRUCTURING THE CITY**20**

Contemporary Processes in Urban Design- Place making in the Digital Age – reconfiguring public realm – Urbanisation and Excursions on density

UNIT V APPLICATION OF DIGITAL TECHNIQUES IN URBAN DESIGN**30**

Depiction of Urban Spaces in Digital Media - Role of Digital Media in Reconfiguring Urban Space – Case studies – Application of Geographic Information Systems, diagramming and 3D Modeling tools in Urban Design - Digital Media as a facilitator for participatory, sustainable urban design.

TOTAL:120 PERIODS**OUTCOMES:**

- The students would become aware of the determinants of contemporary urban form and ways to understand their effects.
- The students would learn to address issues of contemporary urban form through planning and design using appropriate tools.

REFERENCES :

1. Crigore Birdea (ed.), Virtual Reality Technology. Wiley and Sons, New York, 1994
2. William J. Mitchell, City of Bits: Space, Place and the infobahn, MIT Press, 1996
3. Charles Correa, Housing and Urbanisation, Thames and Hudson, 1999
4. Neil leach, Designing for the digital world, John Wiley and Sons, 2002
5. Edmond Bacon, Design of Cities, Penguin 1967
6. Christian Norberg Schulz- Towards a Phenomenology of Architecture, Rizzoli New York, 1980
7. Donald Appleyard, Kevin Lynch, John R. Myer, The View from the Road, MIT Press 1965
8. Benjamin Woolley, Virtual Worlds. Penguin Books, 1993/1994
9. Peter Calthorpe, The Next American Metropolis, Princeton Architectural Press, 1993
10. Thomas A, Horan, Digital Places: Building our city of bits, Urban Land Institute, 2000

OBJECTIVES:

- To provide an overview of various contemporary architects in terms of their works, design philosophies and processes.
- To investigate the effect of various digital technologies on architecture in the real and virtual realms

UNIT I QUALITIES OF VIRTUAL ARCHITECTURE 9

Discussing the differences between the real and virtual space. Virtual space as the potential space. Qualities of the new space: Disconnection of the body, new laws of proximity and increased automatism and its influence on architectural form and space

UNIT II MEDIA AND ARCHITECTURE 9

Visions unfolding/ Media Architecture as desirable/ Films as a space for virtual architecture

UNIT III ISSUES 9

Towards new paradigm – A myth or a promise. / Need versus desire/ anxiety of new/ identity and Fashion.

UNIT IV IDEAS AND WORKS OF CONTEMPORARY ARCHITECTS 12

Ideas and works of contemporary architects - Greg Lynn, Reiser + Umemotto, Lars Spuybroek / NOX Architects, UN studio, Diller Scofidio, Dominique Perrault, Decoi, Marcos Novak, Foreign Office Architects, Asymptote, Herzog and de Meuron, Neil Denari.

UNIT V SEMINAR PRESENTATION 6

Students presentation on the ideas and works of architects known for process oriented approach to architecture. Topics to be discussed with course faculty prior to presentation.

TOTAL: 45 PERIODS

OUTCOMES:

- The student will learn about various design methodologies employed by contemporary architects.
- The student will be acquainted with the use of computation and digital technologies in contemporary architectural design.
- The student will learn to investigate the influence of various media, especially films, on architecture and vice versa.

REFERENCES:

1. L. Convey et. al. Virtual Architecture, Batsford, 1995.
2. William J Mitchell, City of bits: Space, Place and the Infobahn. MIT Press, Cambridge, 1995

OBJECTIVE:

- To investigate the simulation and audit techniques for assessing the energy performance, environmental response and impact of built form.

UNIT I INTRODUCTION TO BUILDING PERFORMANCE EVALUATION 3

Emerging role of performance evaluation in building design and master planning- Performance audit and rating systems- GRIHA, LEED IGBC and BREAM – Architectural Computation and performance audit- Introduction to ECOTECH.

UNIT II PRINCIPLES OF SUSTAINABLE DESIGN 12

E's of sustainability - Integrated approach to environmental design – Case studies – Comparative analysis of green rating systems, LEED, BREAM and GRIHA – Cognitive , analytical and simulated modeling and design of buildings. Zero Carbon Footprint Building.

UNIT III ENVIRONMENTAL ASSESSMENT METHODS AND MODELING FOR PASSIVE SYSTEMS. 12

Modelling and experimental techniques for building assessment/ evaluation and design – Basics of thermal comfort, solar shading/access/ control, day lighting, acoustics air movement etc. – issues and opportunities with current assessment modes/ evaluation tools- Evaluation and assessment based on Building type/ function and program – Building performance with respect to function, program, micro climate, urban planning, envelope design, material – Computer studio and simulation-Mathematical models of heat and mass transfer phenomena through building components: transfer function methods and numerical methods – Models of radiative and convective heat transfer phenomena within buildings

UNIT IV ADVANCE ECOTECH AND ENERGY MODELLING 12

Integration of ECOTECH with BIM, RAPID ENERGY MODELLING- Modelling and performance simulation of existing buildings – residential-institutional- design of a new residential building with ECOTECH

UNIT V SEMINAR AND CASE STUDY PRESENTATION 6

Case study presentation of students on performance evaluation of a building identified by them and approved by the course faculty – Seminar on topics approved by the course faculty.

TOTAL: 45 PERIODS**OUTCOMES:**

- The students will gain knowledge on environmental assessment methods, audit and simulation techniques.
- Will add value to architectural design processes and equip students with energy modeling skills.

REFERENCES:

1. Energy Audit of Building Systems – Moneef Krarti (Ph.D) – CRC Press 2000
2. Clarke, J.A., “Energy simulation in building design”, Adam Hilger Ltd, Bristol, 1985
3. ESRU,. “ESP-r A Building Energy Simulation Environment; User Guide Version 9 Series. “ESRU Manual U 96/1, University of Strathclyde, Energy Systems Research Unit, Glasgow, 1996.
4. Kabele, K., “Modeling and analyses of passive solar systems with computer simulation”, in Proc. Renewable energy sources, PP. 39 – 44, Czech Society for Energetics Kromeriz 1998 (in Czech)

OBJECTIVES:

- This course will examine various services in high rise buildings.
- Understand how services integration can translate into an intelligent and energy efficient system which will enable sustainability of the structure.

UNIT I INTRODUCTION**3**

Standards of high Rise buildings- Indian Standards and Global Standards on High Rise Buildings; Introduction to various services; their significance with regards to High Rise Buildings; Some examples of Buildings and services used in them A brief on evolution of High Rise Buildings. Aspects and Integration of services- Concepts of Intelligence Architecture and Building Automation

UNIT II WATER SUPPLY AND WASTE DISPOSAL**9**

Water supply and waste water collection systems- water storage and distribution systems- Planning and Design- Selection of pumps- rain water harvesting – Sewage collection systems and recycling of water- solid waste disposal . “Some latest Trends Observation, NBC’s recommendations. in these areas can be included.

UNIT III HVAC, ELECTRICAL AND MECHANICAL SYSTEMS**15**

Natural and Mechanical Ventilation systems- Air conditioning systems and load estimation- Planning and design for efficiency-Basic concepts- Automation and Energy Management- concepts. Natural lighting systems- Energy efficiency in lighting systems- load and distribution- Planning and Design for energy efficiency- Automation- basic concepts , Glass and Glazing system for natural lighting. Types of elevators, systems and services- Lobby design- Escalators- safety principles, Some latest Trends, NBC’s recommendations

UNIT IV SAFETY AND SECURITY**6**

Security systems- Access Control and Perimeter Protection- CCTV Intruder alarms- Passive fire safety- Fire Detection and Fire Alarm Systems- Planning and Design- NBC
Some latest Trends

UNIT V CASE STUDIES**12**

Case Studies of High Rise buildings and skyscrapers through appropriate examples- Norman Foster; Ove Arup; Ken Yeang, etc.

TOTAL: 45 PERIODS**OUTCOME**

- Students can apply some or all of these services in one of their design projects.

REFERENCES:

1. William J. Mcguinness, Benjamin Stein and John S. Reynolds, Mechanical and Electrical Equipment for Buildings, John Wiley & Sons, Inc. 1980.
2. Donald Watson, Michael J. Crosbie and John Hancock Callender, Time-Saver Standards for Architectural Design Data, McGraw – Hill International Editions, 1997.
3. A K Mittal, Electrical and Mechanical Services in High Rise Buildings Design and Estimation Manual, 2001
4. Yahya Mohamad Yatim, Fire Safety Issues in High-Rise Residential Buildings: escape routes design and specification, Lambert Academic Publishing, 2011
5. Johann Eisele and Ellen Kloft, High-Rise Manual, Birkhäuser-Publishers for Architecture, 2003

MH7211 ADVANCED ARCHITECTURAL DESIGN STUDIO I L T P/S C
0 0 12 6

OBJECTIVES:

- To understand in depth the increasing complexity of buildings today with respect to technology, services and planning.
- To design within this context.

The design studio will focus on emerging transformations in architecture in terms of aspects such as planning, building heights, floor area, technology, management, etc., It will explore the challenges of designing high rise and high tech buildings. It will enable collaborative learning through exploration, investigation and application of various parameters such as energy efficiency, green concepts, sustainability, services. The studio will integrate all these aspects through appropriate design projects.

OUTCOMES:

- Students would be made aware of the emerging technical areas of architecture.
- Students would get an understanding of designing optimally, balancing the basics of architectural design with emerging new technical and planning parameters.

TOTAL:180 PERIODS

MH7301 EMERGING PRACTICES IN HOUSING L T P/S C
2 0 2 3

OBJECTIVE:

- This course will examine the redefinition of contemporary housing within the contexts of multicultural cities due to globalisation.

UNIT I INTRODUCTION 10

Introduction to this building type, from its industrial beginnings in London and Paris to New York City's Lower East Side and the 20th-century designs of Le Corbusier, Antonio Sant'Elia, and Mies van der Rohe to mention a few.

Investigation of contemporary life and its influence on space and architecture-Globalization and influences on economy- Alternate housing solutions: Commune, Co Housing, Cooperatives, etc.

UNIT II SINGLE FAMILY, MULTI FAMILY HOUSING 12

Review of latest developments in single family and multi family housing by examining the works of Wiel Arets, Shigeru Ban, Ben van Berkel, Kees Christiaanse, Philippe Gazeau, Frank O. Gehry, Steven Holl, Hans Kollhoff, Morger & Degelo, , Jean Nouvel, Kas Oosterhuis, MVRDV

UNIT III HIGH DENSITY HOUSING 9

Issues and concerns- Review of the current state of high density houses - the perspectives and future developments through a study of a few international projects.

UNIT IV NEW FORMS OF LIVING AND HOUSING IN THE DIGITAL ERA 9

Hyper Housing- Multi cultural Housing- lab rooms and cyber homes- Network housing- hybrid buildings- individual sheltered residences; residence cities and bio homes for senior citizens- Works of UN Studio; FOA;; OMA

UNIT V DEFINITION OF HOUSING IN THE INDIAN CONTEXT 20

Design strategies in the context of Indian metropolitan cities will be explored through a studio exercise

TOTAL:60 PERIODS

OUTCOME:

- The students will understand the latest development, issues and design strategies governing the Housing in National and international level.

REFERENCES:

1. Manuel Gausa and Jaime Salazer; Housing+ Single Family Housing; Birkhauser- Publishers for Architecture; 2005
2. Vincene Guillart; Sociopolis:Project for a city of the Future; ACTAR; 2004
3. Jingmin ZHOU; Urban housing Forms; Architectural Press; 2005
4. Adrienne Schmitz; Multifamily Housing Development Handbook; Urban Land Institute; 2001
5. Carles Bronto; Innovative Public Housing; Gingko Press; 2005

MH7302**RESEARCH METHODOLOGIES IN ARCHITECTURE****L T P/S C**
3 0 0 3**OBJECTIVES:**

- To make the students to distinguish various theoretical ideologies influencing the philosophy and values of architecture.
- To establish the sense of systematic inquiry in students mind to analyze and infer the issues and aspects relating to Architecture.

UNIT I INTRODUCTION**9**

Basic research issues and concepts- orientation to research process- types of research: historical, qualitative, co-relational, experimental, simulation and modeling, logical argumentation, case study and mixed methods- illustration using research samples

UNIT II RESEARCH PROCESS**9**

Elements of Research process: finding a topic- writing an introduction- stating a purpose of study- identifying key research questions and hypotheses- reviewing literature- using theory- defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis- illustration using research samples

UNIT III RESEARCHING AND DATA COLLECTION**9**

Library and archives- Internet: New information and the role of internet; finding and evaluating sources- misuse- test for reliability- ethics

Methods of data collection- From primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling- Problems encountered in collecting data from secondary sources-

UNIT IV REPORT WRITING**6**

Research writing in general- Components: referencing- writing the bibliography- developing the outline- presentation; etc.

UNIT V CASE STUDIES**12**

Case studies illustrating how good research can be used from project inception to completion- review of research publications

TOTAL: 45 PERIODS**OUTCOMES:**

- The student will develop the skill to identify, decipher and interpret the issues relating to Architecture, based on research enquiry methods.
- The student will widen the information and will prepare the students for scientific method of researching and research process.

REFERENCES:

1. Linda Groat and David Wang; Architectural Research Methods;
2. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago guides to writing, editing and publishing;
3. Iain Borden and Kaaterina Ruedi; The Dissertation: An Architecture Student's Handbook; Architectural Press; 2000
4. Ranjith Kumar; Research Methodology- A step by step guide for beginners; Sage Publications; 2005
5. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2002

MH7311**DISSERTATION****L T P/S C
0 0 6 3****OBJECTIVES:**

- To expose the students to the various thrust areas in architecture.
- To inculcate the spirit of research in architecture by providing opportunities to read on various issues.
- To expose the students to the finer details of technical writing.
- To provide a platform for a prelude to the 'Design Thesis'.

Dissertation is best expressed as 'Design in text'. It offers an opportunity to look at the research component in architecture in various thrust areas such as history, theory, design and other value based aspects through texts. Students are encouraged to choose any topic of their interest. This may range from analyzing and a critique of the works of an architect, ideologies and philosophies of architects that get transformed spatially, history, typological architecture, sustainability issues and so on. the dissertation must comprise of an aim, the objectives, the scope and limitations of their dissertation, hypothesis (if any), methodology followed by extensive review of literature through references and documentation. The analysis of the work must be substantiated either empirically or through extensive arguments.

A dissertation could also be a Thesis preparation course and gives the student scope for independent study and opportunity to explore specific area of interest which will form the basis of his/ her design thesis project in the next semester. The topic will have to be approved at the start of the semester and reviewed periodically to a jury at the end of the semester.

TOTAL: 90 PERIODS**OUTCOMES:**

- A Dissertation book which is based on accepted norms of technical writing.
- An understanding leading to formation of thesis ideas.

REFERENCES:

1. Iain Borden and Kaaterina Ruedi; The Dissertation: An Architecture Student's Handbook; Architectural Press; 2000.
2. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons 2001.
3. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago guides to writing, editing and publishing.
4. Ranjith Kumar; Research Methodology- A step by step guide for beginners; Sage Publications; 2005
5. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2002.

MH7312

ADVANCED ARCHITECTURAL DESIGN STUDIO II

L T P/S C

0 0 12 6

OBJECTIVES:

- To understand contemporary processes and tools in architectural design.
- To integrate the processes and tools in the design of projects, including those with increased complexity of parameters.

The design studio will focus on the role of emerging tools and processes for understanding and of complex and macro forces in the realm of the built environment as well as designing within this context. It would explore relationships between user group activity, movement, landform and urban form using diagramming and mapping tools to come up with creative prescriptions of certain projected scenarios. The studio will also emphasize on collaborative learning processes. The projects would be of macro scale involving large campus/ township oriented architectural projects as well as urban design.

TOTAL: 180 PERIODS

OUTCOMES:

- Students would be aware of contemporary processes and tools of design.
- Students would use these processes and tools in the design projects to identify and address specific aspects of the project, as well as integrate complexity of connections and issues.

MH7401

BUILDING INFORMATION MODELING

L T P/S C

0 0 6 3

OBJECTIVE:

- To equip students with skills and information to build comprehensive Building Information Models (BIM) using appropriate Digital software and Media.

UNIT I INTRODUCTION TO THE FUNDAMENTALS 10

Key concepts of BIM - reading and manipulating the software Interface - navigating within views - selection methods - the importance of levels and grids- creating walls, doors, windows, and components - working with essential modification commands and load family. Creating floors, ceilings, and stairs - working with type and instance parameters - importing CAD drawings - understanding the project browser and type properties palettes - adding sheets - inserting views onto sheets - adding dimensions and text to the mode and plotting

UNIT II ADVANCED MODELING –FAMILY TYPES AND TOPOSURFACE MODELLING 20

Creating curtain walls, schedules, details, a custom family, and family types - “flex” a family with family types and work with reference planes - creating rooms and an area plan - tag components - customize existing wall styles. Create and edit a toposurface, add site and parking components - draw label contours - work with phasing - understand groups and links - work with stacked walls - and learn the basics of rendering and create a project template.

UNIT III RENDERING AND MATERIAL APPLICATION 20

Creating custom walls, floors, and roofs - keynoting - working with mass elements - enhancing rendering with lighting - producing customized materials - Using sun and shadow settings - Walkthrough technique - adding decals - working with design options and worksets - and calculating energy analysis - managing revisions

UNIT IV BIM FOR COST ESTIMATING, PROJECT PHASING AND ADMINISTRATION 15

Model based Cost Estimating - Challenges in cost estimating with BIM- Cad geometrics vs BIM element description- Visual data models - Material substitutions and value engineering- detailed estimates and take-off sheets- XML and automated cost estimate- project phasing and management- 4D modeling -BIM for project lifecycles.

UNIT V BIM FOR BUILDING ENERGY SIMULATION**25**

Energy simulation for conceptual BIM models using massing- Detailed modeling using design elements- Rapid energy modeling and simulation with Autodesk® Revit® Conceptual Energy Analysis features to simulate performance from within Revit Architecture -Use Autodesk® Green Building Studio® to produce energy consumption, carbon neutrality and renewable potential reports.

TOTAL : 90 PERIODS**OUTCOMES:**

- This is a project-based course where students gain knowledge on the implementation of BIM concepts throughout the lifecycle of a building, from planning and design, to construction and operations.
- The students will learn about how to use BIMs for building energy performance simulation, construction administration

REFERENCES:

1. Eastman, C.; Teicholz, P.; Sacks, R.; Liston, K. (2008) BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. New York: Wiley.
2. Ray Crotty;(2011) The Impact of Building Information Modelling: Transforming Construction. Spons Architecture Price Book.

MH7411**THESIS****L T P/S C
0 0 22 11****OBJECTIVES:**

- To integrate the knowledge gained in the previous semesters with respect to issues/ tools of architectural design at a more advanced level.
- To understand and identify issues appropriate to a particular project or area of architecture , through independent thinking as well as to design in a manner appropriate to the project context.

The students will synthesize the areas of knowledge, skills and techniques acquired in the various courses of the previous semesters through a thesis project of their choice. This thesis project would be a design project with a strong research component. The project would desirably extend the critical position developed within the theory and studio projects as well as dissertation. The scale of the project could extend from individual site to settlement levels. The initial process shall be rigorous, incorporating background research on the topic, case studies, documentation of project issues, context, site and building information, programming. The process would culminate in design interventions at scales appropriate to the topic. The project shall desirably have the potential to serve as a starting point for practice and/ or further research.

Students will submit a detailed proposal on their topic of interest(s). The Proposal shall be approved by the thesis review committee. The thesis project will be reviewed periodically by the review committee. At the end of the semester, the final thesis will be submitted and presented through a viva voce examination before a jury.

TOTAL: 330 PERIODS**OUTCOMES:**

- Students would be able to integrate various contemporary/ advanced issues and techniques into the architectural design process.
- Students would be able to identify and go in depth into specific and appropriate aspects relating to the discipline of architecture and reflect this in the realm of design.

OBJECTIVES:

- This course provides a detailed exposure to students regarding the design & application in the field of life safety, electronic security & services automation requirements.
- To expose the students to the mandatory and inevitable integration of building management systems in building construction.

UNIT I SAFETY SYSTEMS – FIRE ALARM & PUBLIC ADDRESS SYSTEM 9

Objective of a Fire Alarm System, essential components of a Fire Alarm System, Type of detection technology currently in use and Statutory Standards to be followed in design. Explanation of the essential Clauses of the codes, and various types of Technologies employed in the Fire Alarm System, basic knowledge on how a Fire Alarm system works, designed and installed.

Objective of a Public Address System, essential components of a Public Address System, various types of technologies currently in use and design guidelines to be followed and basic knowledge on how a Public Address System works, is designed and installed

UNIT II SAFETY SYSTEMS – FIRE SUPPRESSION SYSTEM 9

Objective of a Fire Suppression System, Explanation on Fire triangle, Essential Components of a Fire Suppression System, different type of Fire Suppression Systems, detailed design criteria for Hand held extinguishers Wet Riser, Sprinkler Systems and various gas Based Fire Suppression System, and Type of Statutory Standards followed in Suppression, Explanation on the essential Clauses and Basic Knowledge on how a Fire Suppression System works, is designed and installed.

UNIT III SECURITY SYSTEMS – ACCESS CONTROL SYSTEM AND INTRUDER ALARM SYSTEM 9

Introduction to Access Control, Intruder Alarm, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed.

UNIT IV SECURITY SYSTEMS – CCTV AND PERIMETER PROTECTION 6

Introduction to CCTV, Perimeter protection system, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed.

UNIT V INTEGRATED BUILDING MANAGEMENT SYSTEM 12

The objective of the Integrated Building Management System (IBMS), the list of utility, safety & security systems that are generally monitored & controlled through IBMS, the various components of IBMS, types of integration with the utility, Safety & security systems, explanation in detail on how each utility, safety & security system is integrated to IBMS, details of various parameters that can be monitored & controlled on each utility, safety & security system and the basic knowledge on how they work, are designed and installed.

TOTAL: 45 PERIODS**OUTCOME:**

- To ensure that every architect understands & designs the buildings that facilitates safe, code compliant, secure & comfortable buildings for the occupants

REFERENCES:

1. Building Automation Systems – A Practical Guide to Selection and Implementation, Maurice Eyke
2. The Principles and Practice of Closed Circuit Television, Mike Constant & Peter Turnbull
3. Rules for Automatic sprinkler Installation – second edition – Pub: Tariff Advisory Committee.
4. CCTV Surveillance, Herman Kruegle.
5. National Building Code of India 2005 (Part IV)
6. Bureau of Indian Standards IS2189, IS2190, IS15105, IS13039.
7. Fire Suppression Detection System, John L. Bryan.
8. Security Systems and Intruder Alarm System, Vivian Capel.

OBJECTIVES:

- The course will provide necessary knowledge and skills to enable the facilitation and transformation of places and spaces where culture and technology are in a state of rapid change and resources are scarce.
- It will examine self help techniques of construction, adaptation, repair and management to understand what is involved in sustainable construction of domestic and community architecture.

UNIT I INTRODUCTION**6**

Architecture and the survival of the planet- Assessing patterns of consumption and their alternatives- Profit and politics- Natural building movement – new context for codes and regulations

UNIT II DESIGN PRINCIPLES**12**

Principle 1: Conserving energy; Principle 2: Working with Climate; Principle 3: minimizing new resources; Principle 4: respect for users; Principle 5: respect for site; Principle 6: holism- Illustrated with examples

UNIT III SUSTAINABLE CONSTRUCTION**6**

Design issues relating to sustainable development including site and ecology, community and culture, health, materials, energy, and water- Domestic and Community buildings using self help techniques of construction; adaptation, repair and management.-.portable architecture-

UNIT IV SYSTEMS, MATERIALS AND APPLICATIONS**12**

Adobe- Cob- Rammed Earth- Modular contained earth- light clay- Straw bale- bamboo- earthen finishes, etc.- their sustainability; adaptability to climate; engineering considerations, and construction methods; Waste as a resource
Portable architecture to Applications through specific case studies

UNIT V CASE STUDIES FROM THE CONTEMPORARY SCENARIO**9**

Ranging from small dwellings to large commercial buildings, drawn from a range of countries to demonstrate best current practice

TOTAL: 45 PERIODS**OUTCOMES:**

- An understanding on the needs of alternative technologies in buildings.
- An exposure to sustainable materials and construction.

REFERENCES:

1. Brenda and Robert Vale; Green Architecture: Design for a sustainable future; Thames and Hudsson;1996
2. Lynne Elizabeth and Cassandra Adams; Alternative Construction: Contemporary Natural Building Methods
3. Victor Papanek; The Green Imperative; Thames and Hudson; 1995
4. Steven Harris and Deborah Berke; Architecture of the Everyday; Princeton Architectural Press; 1997
5. Pilar Echavarría; Portable Architecture- and unpredictable surroundings; Page One Publishing Pvt. Ltd.; 2005

OBJECTIVES:

- To introduce the idea of architecture as enmeshed in the society and a product of larger socio-cultural issues and practices, and not as an autonomous object determined by a hermetically sealed discipline.
- To introduce the various interdisciplinary critical theories and explain their interpretation of architecture.

UNIT I INTRODUCTION 6

Definition of theory - Architectural theory and its nature, purpose and its relation to practice - overview of some traditional architectural theories- context for the rise of more critical theories in architecture – Introduction to Critical Theory- Architecture and Critical Theory.

UNIT II POWER AND BUILT ENVIRONMENT 10

Definition of power- Forms of power- Power in the built environment at various scales - ideas of power and society, power-knowledge- Colonialism in India as a form of dominance- introduction to architecture and urbanism of colonialism in India- Production of Indo-Saracenic architecture- New Delhi as a part of imperial vision- Case studies of the architecture and urbanism of power in the modern world.

UNIT III PLACE AND ARCHITECTURE 10

Critical reactions to modernity/ modernism with reference to the concept of context/ place- Critical Regionalism and architectures of resistance- Place and phenomenology in architecture

UNIT IV SEMIOTICS AND ARCHITECTURE 10

Architecture as communication and representation- introduction to linguistic concepts of semiotics, structuralism, post structuralism and deconstruction- brief overview of postmodern and deconstructivist architecture with reference to these concepts

UNIT V CONTEMPORARY ISSUES IN ARCHITECTURE 9

Conditions of late capitalism and postmodern society- Society of spectacle- Architecture as spectacle and seduction- Theme parks and shopping malls- privatisation of public spaces- aestheticisation of architectural issues- influence of globalisation and digital revolution on architectural processes- debates of heritage- gender and space

TOTAL: 45 PERIODS**OUTCOMES:**

- The students would gain an understanding of architecture as an integral production of society as well as engage in critical thinking to interpret architecture.
- The students' awareness through this course would inform their practice/ research.

REFERENCES:

1. Neil Leach (ed) Rethinking Architecture, Routledge 2000
2. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000
3. Kate Nesbitt, Theorizing a New Agenda for Architecture, Princeton Architectural Press, 1996
4. Anthony D. King, Colonial Urban Development, Routledge & Paul, London, 1976
5. Thomas Metcalf Imperial vision, Oxford, 2002
6. Jane Rendell, Barbara Penner, Iain Borden, Gender Space Architecture, Routledge, 2000
7. Kim Dovey, Framing Places: Mediating Power in Built Form, Routledge 1999.
8. Neil Leach, Anaesthetics of Architecture, MIT Press 1999,
9. Guy Debord. Society of Spectacle, Iain Borden & Jane Rendell, (ed), Intersections, Routledge 2000
10. Paul Allan Johnson, Theory of Architecture, Routledge 2000
11. Christian Norberg Schulz- Towards a Phenomenology of Architecture, Rizzoli New York, 1980

MH7004

GIS MODELLING IN URBAN PLANNING

L T P/S C
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OBJECTIVE:

- To examine the role and application of Geographic Information Systems in environmental design, community charities and other urban design projects.

UNIT I INTRODUCTION

6

GIS – Spatial data, non Spatial data, Plan, Map, Scale, Map Projection, GPS, GCP collection, Spectral signature curve, Image processing – Geo coding / Geo referencing, GIS software, Two tier architecture, Three tier architecture, Thin client, Thick client

UNIT II DATABASE CONCEPTS

9

Data structures, Databases, Files, Types of Tables, Table operations, Creating a Table, Accessing Records in a Table, Manipulating records in a Table, Modifying Table structure, Reports, Advantages of database, Primary key and data access, Composite primary key, Defining a primary key, Sorting, Indexing, Master Detail relationships, Types of relationships, Foreign key, Deleting, updating and adding records to linked tables, ER Diagram, Data Model – Physical, logical and conceptual.

UNIT III SPATIAL DATA

9

Comparative methods for obtaining images, Aerial Photograph, Satellite Imagery – High resolution imagery – LISS, PAN, MSS – Ortho rectification, Digitization – Layers, Digital Elevation model, Digital Terrain Modelling, Existing maps – Problems and Issues, Rubber sheeting, Digitization, overlay, union, intersection.

UNIT IV INTRODUCTION TO GIS SOFTWARE

9

Arc Info – Coverage – Arc, Node, Tics, Add, get, put, Map extent, edit, Topology creation – Clean, Build, Tables – Creating tables, updating tables, join, drop item, Export, Import, overlay, union, intersection, buffer.

UNIT V MODELLING GIS PROJECTS FOR URBAN AREAS

12

Preparation of Land use map, Land use suitability analysis, Screen design, Visual Basic application using Map objects.

TOTAL: 45 PERIODS

OUTCOMES:

- The student will increase the knowledge on GIS and the various characteristics of Data.
- The student will accept the potential of GIS and develop integrated practice of using the GIS application with architecture.

REFERENCES:

1. Information systems for Urban Planning – Robert Laurini
2. Modelling our world – ESRI Press
3. An Introduction to Data base Systems – C.J.Date
4. Fundamentals of Data base Management System by Elmasri & Navethi
5. ESRI (1992) Understanding GIS, The Arc Info Methods, ESRI, USA

MH7005

ANTHROPOLOGY AND ARCHITECTURE

L T P/S C
3 0 0 3

OBJECTIVES:

- To understand the relationship between society and the making of the built environment.
- To understand phenomenology and the role of meaning in built form.
- To look at place making from the architectural as well as urban design point of view.

UNIT I	CONSERVATION TECHNIQUES	9
Decay of monuments – reasons to decay – restoration techniques – soil and structure conservation – cleaning of monuments – reconstruction of monuments- Decay Mapping -Quantifying techniques- Introduction to structural analysis.		
UNIT II	COMPOSITION, CHARACTERISTICS AND DETERIORATION OF MASONRY MATERIALS	9
Brick- Stone- Composite masonry- causes for decay and deterioration- remedial measures- Introduction to the significance and use of the lime – working with lime – repairing and replacing plaster - Issues concerning terracotta and mud- use of consolidants.		
UNIT III	COMPOSITION, CHARACTERISTICS AND DETERIORATION OF OTHER STRUCTURAL MATERIALS	9
Use and repair of iron and steel members – Understanding wood and timber structures / methods to conserving timber structures-		
UNIT IV	CASE STUDIES	9
Case studies at the national, international and state level conservation projects done by ASI, INTACH & Conservation Architects- assessment and evaluation.		
UNIT V	MATERIAL CONSERVATION AND ADAPTIVE REUSE	9
Studio on Adaptive reuse/ restoration project / building in Existing fabric.		

TOTAL: 45 PERIODS

OUTCOMES:

- A holistic understanding of the physical processes of building, including gaining knowledge about historical, material and cultural aspects.
- Gaining sensitivity and knowledge with respect to process of physical interventions in historic buildings.

REFERENCES:

1. Bernard Feilden, Conservation of Historic Buildings, 2nd Edition, Butterworth, 1994.
2. Martin E Weaver; Conserving buildings: Guide to Techniques and materials, Revised Edition; Wiley; 1997
3. J. Stanley Rabun; Structural Analysis of Historic buildings: Restoration, Preservation and Adaptive Reuse; Applications for Architects and Engineers; Wiley 2000
4. Kirk Urwin J.; Historic Preservation Handbook; Mc Graw hill 2003
5. Ernest Burden; Illustrated Dictionary of Architectural Preservation; McGraw hill 2003

MH7007	LANDSCAPE ECOLOGY AND PLANNING	L T P/S C
		3 0 0 3

OBJECTIVES:

- To understand any developmental activity involves intervention in the natural processes and to minimize the impact due to this intervention.
- To outline the evolution of landscape planning, its premises and the process.

OBJECTIVES:

- To expose the students on the issues of sustainability at the global level.
- To Focus on the energy conservation landscape and sustainability at the micro level.
- Sustainable landscape design for various climates of India

UNIT I INTRODUCTION TO SUSTAINABILITY 10

Need and concept of sustainability, Brundtland report, World Commission on environment and development, sustainable development, sustainable growth, sustainable economy and sustainable use. Visions of sustainability. Source and ethics of sustainability. Sustainability and Climate Change.

UNIT II SUSTAINABLE SITE 7

Sustainable site – LEEDS, BREEM, rating erosion and sedimentation control, site selection, urban development, landscape and exterior design etc., Green Building in the context of sustainability. Ecology and sustainability. Eco-City.

UNIT III INTRODUCTION TO ENERGY CONSERVATION IN LANDSCAPE 9

Energy conservation and sustainability, principles of energy systems, energy and global environment, scope for energy conservation in landscape.

UNIT IV ENERGY CONSERVATION METHODS IN LANDSCAPE ARCHITECTURE-CASE STUDIES 10

Various methods of energy conservation in landscape architecture, energy conservation techniques in various climates- hot and humid, hot dry, etc. Energy efficient site planning and landscape development. Energy efficient planting design. .

UNIT V SUSTAINABLE LANDSCAPE PRACTICES 9

Sustainable landscape maintenance and management, Sustainable planning and city form. Sustainable urban landscape, landscape sustainability at the national and regional level.

TOTAL: 45 PERIODS

OUTCOMES:

- Understanding of sustainability from macro to micro level.
- Knowledge on Energy conscious Landscape design

REFERENCES:

1. John.F.Benson and Maggie.H.Roe, Landscape and sustainability, John Wiley Publication, New York, 2000.
2. O.R.Gray, Landscape Planning for Energy Conservation,
3. Anne Simon Moffat and Marc Schiller, Landscape design that saves energy, William Monow and co.,Inc., New York, 1981.
4. Publications of Centre for science and environments, TERI, New Delhi
5. Grady Clay, Water and the landscape McGraw-Hill Inc.,US; First Edition edition 1979)

OBJECTIVE:

- To expand the students knowledge on landscape within urban areas and open spaces in Urban context.

UNIT I INTRODUCTION 6

City and pattern – hierarchy of streets and squares – spatial organization and land use – road net works and basic services. Open spaces with in urban environment.

UNIT II URBAN SPACES 9

Cultural, social and aesthetic value of urban spaces and its perception, Imageability, Townscape elements. Urban space enhancement.

UNIT III OPEN SPACE SYSTEM 9

Open space development in urban design context. Evolution of public park as a major component of urban landscape. Open space development in new towns. Park systems, water fronts. Green infrastructure. Urban ecology, urban water sheds.

UNIT IV ELEMENTS IN URBAN LANDSCAPE 12

Design of public parks, roads, green ways, parkways, promenade and plaza. Public art. Plant selection criteria, furnishings and lighting of public space, maintenance and management of public spaces and parks,

UNIT V CASE STUDIES 9

Contemporary urban landscape issues. Case studies-Study, understanding and analysis of known examples at the national and international levels.

TOTAL: 45 PERIODS**OUTCOMES:**

- Types, characteristics and elements of urban open spaces.
- Case studies of urban landscapes.

REFERENCES:

1. Garden Cullen, The concise Townscape, Architectural press, London.
2. Kevin Lynch, Image of City, Cambridge, MA, 1961.
3. Henry F. Arnold, Trees in Urban Design, Van Nostrand Reinhold Company.
4. Matthew Carmona, Tim Heath, Public places – Urban spaces, Architectural press, 2003.
5. Michael Hough, Cities and natural process, Routledge, 1995.
6. Donald Watson, Alan plattns, Roberta shibley, Time savers standards for urban design, McGraw hill, 2003.
7. Elements and total concept of urban landscape design, Graphic –sha publishing Co, 2001.
8. Tom turner, city as landscape, Eand FN spon, 1996.
9. Cliff Tandy, Handbook of urban Landscape, Architectural Press, 1970.

UNIT I INTRODUCTION TO WEB DESIGN 15

Basics of web design – Introduction to software used for web design – ADOBE IMAGE READY, DREAMWEAVER, FLASH etc.

