

ANNA UNIVERSITY, CHENNAI
UNIVERSITY DEPARTMENTS
M.ARCH. (GENERAL)
REGULATIONS – 2015
CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) :

- I. To provide students with additional knowledge and skills as an architect/ researcher/ teacher.
- II. To enable students to add value to the process of architectural design by incorporating depth in already existing fields of study relevant to architecture.
- III. To enable students to widen the scope of their professional abilities through additional fields of study that would enhance their knowledge in intellectual, creative, technical, social and environmental realms.
- IV. to enable students to take independent, informed and innovative decisions within the discipline of architecture.
- V. to enable students to contribute to larger society through their future career as architect/ researcher/ teacher.

PROGRAMME OUTCOMES (POs):

On successful completion of the programme,

1. Graduates will demonstrate an all round skill in design and research.
2. Graduates will be able to identify additional parameters/ issues within the context of architectural design and resolve them.
3. Graduate will be able to resolve architectural problems with due consideration to urban issues and environmental issues.
4. Graduates will be able to bring technical expertise in analysis and synthesis.
5. Graduates will be able to apply cutting edge methods/ tools/ approaches in the resolution of problems.
6. Graduates will be able to bring critical thinking in the consideration of any aspect of design.
7. Graduates will be able to identify problems or create design solutions in a holistic manner.
8. Graduates will be able to contribute further to society through their design/research/ teaching.

Programme Educational Objectives	Programme Outcomes							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
I	x							
II		x						
III			x	x	x	x		
IV							x	
V								x

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	
YEAR 1	SEM 1	Urban Design- Theory and Practice			x						
		Urban Conservation			x						
		Contemporary Processes in Architectural Design					x				
		Urban Morphology			x						
		Advanced Architectural Design Studio I		x							
		Elective I									
	SEM 2	Sustainable Design- Principles and Practice				x					
		Performance Evaluation of Buildings					x				
		Research Methodologies in Architecture							x		
		Building Information Modeling					x				
		Advanced Architectural Design Studio II		x							
Elective II											
YEAR 2	SEM 1	Explorations in Architectural Form					x				
		Contemporary Architectural Theory and Practice						x			
		Dissertation	x						x		
		Advanced Architectural Design Studio III		x							
		Elective III									
	SEM 2	Thesis	x							x	x

Attested

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CURRICULA AND SYLLABI FOR I TO IV SEMESTERS

SEMESTER I

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P/S	C
1.	AA7101	<u>Urban Conservation</u>	PC	3	3	0	0	3
2.	AA7102	<u>Urban Design - Theory and Practice</u>	PC	3	3	0	0	3
3.	AA7151	<u>Contemporary Processes in Architectural Design</u>	PC	3	3	0	0	3
4.		Elective I	PE	3	3	0	0	3
STUDIO								
5.	AA7111	<u>Urban Morphology</u>	EEC	6	0	0	6	3
6.	AA7112	<u>Advanced Architectural Design Studio I</u>	EEC	12	0	0	12	6
TOTAL				30	12	0	18	21

SEMESTER II

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P/S	C	Pre-requisites	
1.	AA7201	<u>Sustainable Design - Principles and Practice</u>	PC	3	3	0	0	3	Pass in ----- Advanced Architectural Design Studio I	
2.	DG7251	<u>Performance Evaluation of Buildings</u>	PC	4	2	0	2	3		
3.	AA7251	<u>Research Methodologies in Architecture</u>	PC	3	3	0	0	3		
4.		Elective II	PE	3	3	0	0	3		
STUDIO										
5.	AA7211	<u>Building Information Modeling</u>	EEC	6	0	0	6	3		
6.	AA7212	<u>Advanced Architectural Design Studio II</u>	EEC	12	0	0	12	6		
TOTAL				31	11	0	20	21		

SEMESTER III

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P/S	C	Pre-requisites	
1.	AA7301	<u>Contemporary Architectural Theory and Practice</u>	PC	3	3	0	0	3	Advanced Architectural Design Studio II ----- Pass in	
2.	AA7302	<u>Explorations in Architectural Form</u>	PC	4	2	0	2	3		
3.		Elective III	PE	3	3	0	0	3		
STUDIO										
4.	AA7311	<u>Advanced Architectural Design Studio III</u>	EEC	14	0	0	14	7		
5.	AA7312	<u>Dissertation</u>	EEC	6	0	0	6	3		
TOTAL				30	8	0	22	19		

SEMESTER IV

S. No.	Course Code	Course Title	Category	Contact Periods	L	T	P/S	C	Pre-requisites
STUDIO									
1.	AA7411	<u>Thesis</u>	EEC	22	0	0	22	11	Advanced Architectural Design Studio III ----- Pass in
TOTAL				22	0	0	22	11	

TOTAL NO OF CREDITS : 72

PROGRESS THROUGH KNOWLEDGE

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PROFESSIONAL CORE (PC)

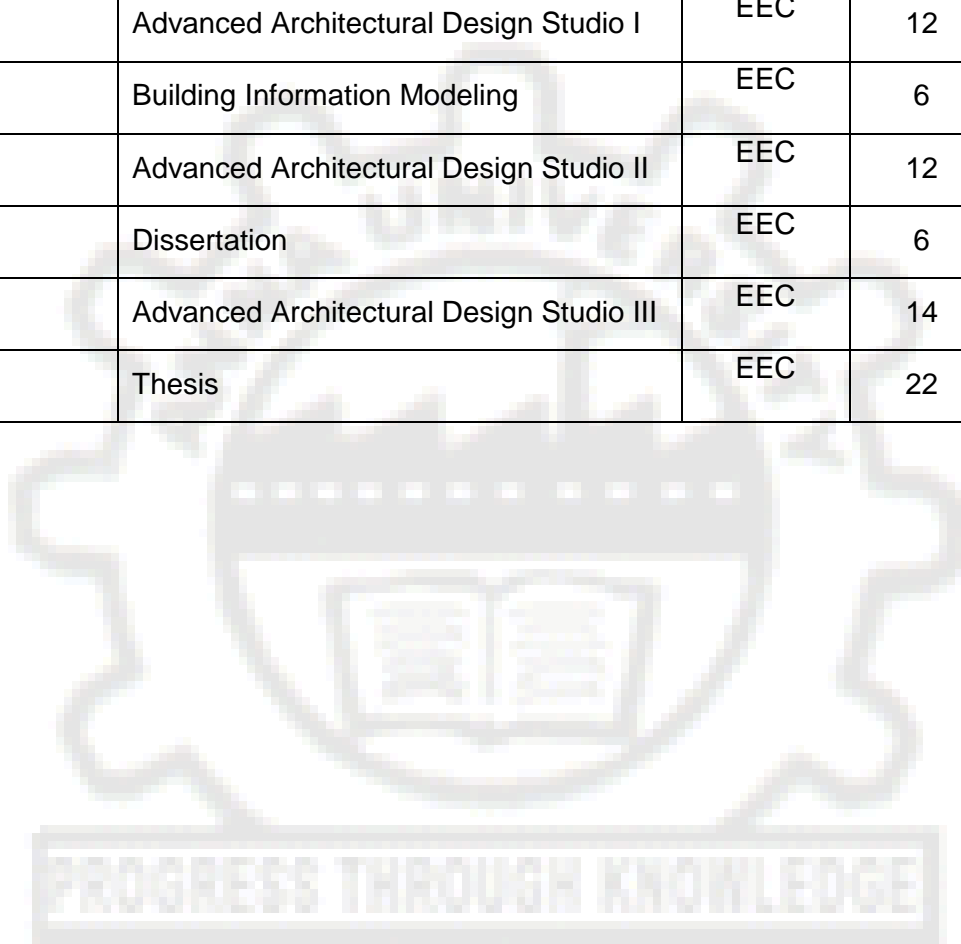
Sl.No.	Course Code	Course Title	Category	Contact Periods	L	T	P /S	C
1		Urban Design- Theory and Practice	PC	3	3	0	0	3
2		Urban Conservation	PC	3	3	0	0	3
3		Contemporary Processes in Architecture	PC	3	3	0	0	3
4		Sustainable Design - Principles and Practice	PC	3	3	0	0	3
5		Performance Evaluation of Buildings	PC	4	2	0	2	3
6		Research Methodologies in Architecture	PC	3	3	0	0	3
7		Explorations in Architectural Form	PC	4	2	0	2	3
8		Contemporary Architectural Theory and Practice	PC	3	3	0	0	3

PROFESSIONAL ELECTIVE (PE)

Sl.No.	Course Code	Course Title	Category	Contact Periods	L	T	P /S	C
1	AA7001	<u>Anthropology and Architecture</u>	PE	3	3	0	0	3
2	AA7002	<u>Appropriate Technologies and Sustainable Construction</u>	PE	3	3	0	0	3
3	AA7003	<u>Architecture and Critical Theory</u>	PE	3	3	0	0	3
4	AA7004	<u>Emerging Practices in Housing</u>	PE	3	3	0	0	3
5	AA7005	<u>GIS Modelling in Urban Planning</u>	PE	3	3	0	0	3
6	AA7006	<u>Material Conservation</u>	PE	3	3	0	0	3
7	AA7007	<u>Services in High Rise Buildings</u>	PE	3	3	0	0	3

EMPLOYMENT ENHANCEABILITY COURSE (EEC)

Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P /S	C
1		Urban Morphology	EEC	6	0	0	6	3
2		Advanced Architectural Design Studio I	EEC	12	0	0	12	6
3		Building Information Modeling	EEC	6	0	0	6	3
4		Advanced Architectural Design Studio II	EEC	12	0	0	12	6
5		Dissertation	EEC	6	0	0	6	3
6		Advanced Architectural Design Studio III	EEC	14	0	0	14	7
7		Thesis	EEC	22	0	0	22	11



OBJECTIVES

- To introduce 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 give an overview of current status of conservation in India and introduce issues and practices of urban conservation at various levels and scales.

UNIT I INTRODUCTION TO CONSERVATION 9

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 9

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 9

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 9

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 9

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 : 45 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.

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6. Jonathan Barnett, An Introduction to Urban Design
7. Gosling and Maitland, Urban Design, St. Martin's Press, 1984
8. William J. Mitchell, City of Bits: Space, Place and the infobahn, MIT Press, 1996.
9. Charles Correa, Housing and Urbanisation, Thames and Hudson, 1999
10. Donald Appleyard, Kevin Lynch, John R. Myer, The View from the Road, MIT Press 1965
11. Peter Calthorpe, The Next American Metropolis, Princeton Architectural Press, 1993
12. Thomas A, Horan, Digital Places: Building our city of bits, Urban Land Institute, 2000
13. Tridib Banerjee, Anastasia Loukaitou- Sideris, Companion to Urban Design, Routledge 2014

AA7151 CONTEMPORARY PROCESSES IN ARCHITECTURAL DESIGN L T P/S C

3 0 0 3

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

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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.

AA7111

URBAN MORPHOLOGY

L T P/S C
0 0 6 3

OBJECTIVES

- To understand the phenomenon of urbanism through case studies engaging ideas, tools and techniques.

The course enables an understanding of urban morphology through applying ideas, methods and techniques of urban design to the practical study of the city. The various processes that influence the evolution of urbanism as well as the resultant morphology would be understood through the study. The city would be understood from different perspectives- climatic, historic, perceptual, social, density, etc., The role of architecture in shaping the city would also be studied in detail.

TOTAL:90 PERIODS

OUTCOME

- Study of urban processes would help understand the relationship between architecture and the city and thereby enrich the architectural design process.

REFERENCES

1. Spiro Kostof, The City Shaped, Thames and Hudson, 1991
2. Malcolm Moore & Jon Rowland Eds, Urban Design Futures, Routledge, 2006
3. Time Saver Standards for Urban Design
4. Daniel G. Parolek, Karen Parolek, Pauc C. Cram, Form Based Codes, John Wiley 2008
5. Jonathan Barrett, City Design, Routledge 2011
6. Project on the City, Great Leap Forward, Harvard Design School, 2001
7. Martin Dodge, Rob Kitchin and Chris Perkins, Eds, The Map reader, John Wiley 2011
8. OMA, Dutch Town
9. Tridib Banerjee, Anastasia Loukaitou- Sideris, Companion to Urban Design, Routledge 2014

AA7112

ADVANCED ARCHITECTURAL DESIGN STUDIO I

L T P/S C
0 0 12 6

OBJECTIVES

To engage in architectural design in the context of the city.

The studio will focus on architecture as being shaped by and shaping the urban context. The process of architectural design would be seen along with the aspects such as nature of cities, urban morphology, history, place, density, society, public realm, economy, climate and microclimate, ecology, legislation, finance. The design projects would become the site for taking positions on specific issues and developing these ideas to completion.

OUTCOME

- An ability to design buildings as positive additions to the city.

TOTAL : 180 PERIODS

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OBJECTIVES

- To sensitize the students to the importance of sustainable design
- To make students aware of the ways to sustainable design.
- To help student develop analytical abilities in the evaluation of buildings with respect to sustainability.

UNIT I INTRODUCTION**9**

Basics of ecology, ecosystems, energy and material cycles in nature- function of ecosystem- Attitudes to sustainable architecture: a historical perspective- Concept of Sustainability and Sustainable Development - Carrying capacity, methods of assessing carrying capacity, ecological foot print, carbon foot print, life cycle analysis, EIA- Global and local environmental issues- climate change, global warming, loss of bio-diversity, urban heat islands- Impact of construction sector on environment; Need, general premises and strategies for sustainable and green design

UNIT II SUSTAINABLE PLANNING AND ARCHITECTURE**12**

Settlement level planning, Urban ecology, Urban planning considerations- Building and its interactions with the environment, general principles for minimizing environmental impact of buildings- Eco-mimicry as a design tool based on ecosystem analogy- The form of the house: the building as an analogy- Site planning considerations, working with climate: passive design principles, building envelope design, indoor environment quality- case studies.

UNIT III ENERGY AND WATER MANAGEMENT IN BUILDINGS**6**

Energy management in buildings –reducing demand- relying on renewable energy- net zero/ energy plus buildings - photovoltaics and solar hot water systems- small scale wind systems and hydro power- Water management in buildings- water saving / demand management, water harvesting for recharge and use, reuse/ recycling

UNIT IV ENVIRONMENTAL IMPACT OF BUILDING MATERIALS**6**

Impact of building materials- calculating embodied energy- impact of recycling, processing and time on embodied energy- embodied energy of different building materials- considerations for choice of materials for low energy- life cycle analysis- optimizing construction, site management, post occupancy building management- Adaptive reuse, Brown field site development, construction and demolition waste management

UNIT V EVALUATING SUSTAINABILITY IN BUILDINGS**12**

Definitions of Green Building - Green Building Evaluation Systems: LEED, GRIHA- Legal instruments/ incentives for sustainable buildings - Post occupancy performance evaluation of buildings- Case studies of buildings and analysis of their performance with respect to principles of sustainability.

TOTAL: 45 PERIODS**OUTCOMES**

- An understanding on sustainability as applicable to architecture and planning.
- Knowledge on renewable energy and energy conservation through material usage.
- Ability to critically analyse buildings with respect to sustainability.

REFERENCES

1. Ken Yeang; Eco design - A Manual for Ecological design, Wiley- Academy,2006
2. Sue Roaf et all; 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

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OBJECTIVES

- 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 6

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

UNIT II PRINCIPLES OF SUSTAINABLE DESIGN 15

E's of sustainability - Integrated approach to environmental design- Case studies – Comparative analysis of green rating systems, LEED, BREEM 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 15

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 ECOTECT AND ENERGY MODELLING 15

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

UNIT V SEMINAR AND CASE STUDY PRESENTATION 9

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: 60 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

- Energy Audit of Building Systems – Moneef Krarti (Ph.D) – CRC Press 2000
- Clarke, J.A., “Energy simulation in building design”, Adam Hilger Ltd, Bristol, 1985
- 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.
- 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

- To introduce the students to the importance of critical inquiry as a way of gaining knowledge and adding to it through research.
- To expose the students to the various forms of research and research methodologies/processes.
- To engage this understanding in the specific field of architectural research.

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 issues relating to architecture based on research enquiry methods.
- The student will gain knowledge of different methods of conducting research and research writing.

REFERENCES

1. Linda Groat and David Wang; Architectural Research Methods – 2nd edition ‘,John Wiley & Sons Inc,Hoboken,New Jersey, US , 2013.
2. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; ‘The Craft of Research’ , 3rd Edition; Chicago guides to writing, editing and publishing;2008
3. Iain Borden and Kaaterina Ruedi Ray ; The Dissertation: An Architecture Student’s Handbook; Architectural Press; 2006
4. Ranjith Kumar; Research Methodology- A step by step guide for beginners-3rd Edition ; Sage Publications;2011
5. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2011.
6. JA Smith, P Flowers, M Larkin -Interpretative Phenomenological Analysis: Theory, Method and Research (English) FIR Edition- Sage Publication -2009.

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 15

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

Choosing material for buildings- 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 BUILDING ENERGY SIMULATION 30

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.

UNIT V BIM FOR COST ESTIMATING, PROJECT PHASING AND ADMINISTRATION 5

Introduction and theoretical information on the following topics- 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.

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 BIM for building energy performance simulation, construction administration

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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.

AA7212

ADVANCED ARCHITECTURAL DESIGN STUDIO II

L T P/S C
0 0 12 6

OBJECTIVES

- To incorporate sustainability in architectural design at various scales.
- To balance varied technical and planning considerations in building design with aspects of sustainability.

The studio will focus on the challenges of incorporating sustainable principles into architectural design projects and typologies of increased complexity that are prevalent in the contemporary world. Aspects of planning, technology, services, density, height of construction, management would be examined along with considerations such as environmental performance, resource optimisation, ecological impact in order to produce a viable synthesis of diverging needs.

TOTAL : 180 PERIODS

OUTCOME

- An ability to balance human needs with environmental concerns in architectural design.

AA7301

CONTEMPORARY ARCHITECTURAL THEORY AND PRACTICE

L T P/S C
3 0 0 3

OBJECTIVES

- To look at contemporary architectural practices/ practitioners along with stated ideas/ theoretical writings in order to understand the relation between ideas/ theory and practice.
- To look at how architectural practices engage with issues/ conditions either as reaction to or as concurrence with contemporary world.
- To look at architecture and understand the larger forces/context that produces it
- To engage in architectural interpretation and criticism

UNIT I ARCHITECTURE AND MEANING

9

Interpreting and analysing Ideas/ writings and works of architects that address the question of meaning- for example Bernard Tschumi, Peter Eisenman- Discussion of contemporary Iconic architecture/ Starchitecture through stated intent- for example Frank Gehry, Zaha Hadid, Daniel Libeskind- interpreting and analysing ideas and works of BIG architects

UNIT II ARCHITECTURE AND CONTEXT

9

interpreting and analysing ideas/ writings and works of architects that address universals of architecture within a particular context- for example Zumthor, Murcutt, Siza, Barragan, Souto de Moura, Correa, Doshi - interpreting and analysing ideas/ writings and works of architects who address sustainability- for example Ken Yeang, William McDonough

- UNIT III ARCHITECTURAL FORM IN THE DIGITAL AGE 9**
 Interpreting and analysing ideas/ writings and works of architects that derive form through contemporary processes of design and engaging current technology- example Greg Lynn, ZHA, UNstudio, NOX, Novak, FOA
- UNIT IV ARCHITECTURE AND THE CITY 9**
 Interpreting and analysing Ideas/ writings and works of architects that engage with the city/ its issues- for example Rem Koolhaas, MVRDV
- UNIT V EMERGING ARCHITECTURAL PRACTICES IN INDIA 9**
 Study and analysis of emerging practices in India along with their stated ideals/ approaches/ writings in the context of the diverse interests and concerns of the contemporary world.

TOTAL : 45 PERIODS

OUTCOME

- A critical understanding of architectural ideas and practice prevalent in the contemporary world that would inform architectural ideals/ positions and design responses.

REFERENCES

1. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000
2. Kate Nesbitt, Theorizing a New Agenda for Architecture, Princeton Architectural Press, 1996
3. Harry Francis Mallgrave and David Goodman, An Introduction to Architectural Theory- 1968 to the present, Wiley Blackwell 2011
4. Steven Holl, Juhani Pallasmaa, Alberto Pérez Gómez, Questions of perception: phenomenology of architecture, William Stout, 2006
5. Daniele Pauly, Barragan, Space and Shadow, Walls and Colour, Birkhauser 2002
6. Tschumi, Bernard. Architecture and Disjunction. Cambridge, MA: MIT Press, 1994
7. Koolhaas, Rem, and Bruce Mau, S, M, L, XL. New York: Monacelli Press, 1995
8. Bjarke Ingels, Yes is More
9. Lynn, Greg. Animate Form. New York: Princeton Architectural Press, 1999
10. MVRDV, FARMAX
11. B.V.Doshi, Paths Uncharted
12. Rahul Mehrotra, Architecture in India since 1990

AA7302

EXPLORATIONS IN ARCHITECTURAL FORM

L T P/S C
2 0 2 3

OBJECTIVE

- To introduce contemporary ways and processes of generating architectural form through small design exercises.

UNIT I DIAGRAMMING 12
 Introduction to diagramming- history- traditional diagrams- contemporary diagramming processes as a tool to creative interpretation and design of architectural form- simple exercises in diagramming

UNIT II SHAPE GRAMMAR 12
 Introduction to shape grammar- applications of shape grammar- simple design exercises in shape grammar

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UNIT III FRACTALS**12**

Introduction to Fractals- examples from nature and built environment- types of fractals- fractal creation, generators and initiators, direction and proportion- –simple design exercises in fractals

UNIT IV EVOLUTIONARY ALGORITHMS**12**

Introduction to evolutionary algorithms – evolutionary art- optimisation- synthesis of topology, geometry and component properties of a structure using genetic algorithm- simple design exercises based on evolutionary algorithm

UNIT V PARAMETRIC DESIGN**12**

Introduction to parametric design- concept of scripting- simple design exercises in parametric design

OUTCOME

- The student will be able to explore architectural form through contemporary processes

TOTAL : 60 PERIODS**REFERENCES**

1. Mark Garcia, The Diagrams of Architecture, Wiley 2010
2. Jane Burry, Mark Burry, The New Mathematics of Architecture, Thames & Hudson, 2012
3. Peter Szalapaj, Contemporary Architecture and the Digital design Process, Architectural Press 2005
4. Bovill. C, Fractals in architecture and design, Birhauser, Boston, 1996.
5. Stephen Todd and William Latham. Evolutionary Art and Computers, Academic Press, New York, 1992
6. Melanie Mitchell, An Introduction to Genetic Algorithms, MIT 1996

AA7311**ADVANCED ARCHITECTURAL DESIGN STUDIO III****L T P/S C****0 0 14 7****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 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 architectural design interventions in the urban context.

TOTAL: 210 PERIODS**OUTCOME**

- 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.

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**OUTCOME**

- 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.

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

OUTCOME

- 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.

AA7001

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 RELATIONSHIP BETWEEN CULTURE, SOCIETY, ANTHROPOLOGY AND ARCHITECTURE

6

Concepts of culture, society, politics and anthropology – relation between society and built environment – introduction to cultural anthropology view of architecture.

UNIT II ANTHROPOLOGY OF TRADITIONAL ARCHITECTURE

10

Architecture as a Process – kinship and house societies – perceptions of built form – conceptions of space – symbolism and technology – study of the above through case study of traditional architecture in India, Asia and Africa.

UNIT III ANTHROPOLOGY AND PLACE MAKING

15

Conditions of modernity – Fragmentation of society – Heidegger and notions of dwelling – C Noeberg Schultz and notions of Genius Loci Rapoport and studies on the meaning of built environment – Joseph Rykwert and the idea of house – Bollnow and idea of space – Jan Pieper and the notions of sacred space.

UNIT IV AN OVER VIEW OF URBAN ANTHROPOLOGY

6

Meaning of urban studies and urban anthropology – role of cities – urban ethnography, primary units, major components and units of integration – anthropology and contemporary urban issues.

UNIT V SEMINAR

8

Students would make presentations exploring the relevance and impact of anthropological studies on contemporary architecture and design through readings/case studies. The proposal must be discussed with course faculty prior to presentation.

TOTAL: 45 PERIODS

OUTCOME

- A comprehensive understanding of architecture and urbanism as expressions of particular societies in time and place.

REFERENCES

1. Roxanna Wasterson; The living House Anthropology of Architecture in S E Asia; Oxford Press.
2. Claire Melhuish (ed); Architecture and Anthropology – AD Vol 66 No 11/12 Nov - 1996
3. Joseph Rykwert; On Adams house in Paradise; MIT Press 1987
4. F Bollnow; Mann, Bensch and Raum, Stuttgart; 1963.
5. Joseph Rykwert – Idea of a Town: The Anthropology of Urban Form in Rome; 1976.
6. Nold Egenter; The review of the Primitive in Architecture – Architectural Anthropology – Research Series Vol. I and II; Structura Mundi; 1992 and 1996.
7. Edwin James; Anthropology of the City; Prentice Hall; 1977.
8. J Carstern and S H Jones; About the house: Levi Strauss and Beyond; Cambridge University Press; 1955.

AA7002 APPROPRIATE TECHNOLOGIES AND SUSTAINABLE CONSTRUCTION L T P/S C
3 0 0 3

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

UNIT IV SYSTEMS, MATERIALS AND APPLICATIONS 12

Adobe- Cob- Rammed Earth- Modular contained earth- light clay- Straw bale- bamboo- earthen finishes- sustainability- adaptability to climate- engineering considerations and construction methods; Waste as a resource- portable architecture.

UNIT V BEST CURRENT PRACTICE 9

Case studies demonstrating best current practice in a scale ranging from small dwellings to large commercial buildings drawn from across the world.

TOTAL: 45 PERIODS

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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 Hudson;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

AA7003

ARCHITECTURE AND CRITICAL THEORY

L T P/S C
3 0 0 3

OBJECTIVES

- To introduce the idea of architecture as enmeshed in society and a product of larger socio-cultural processes, and not as autonomous object within 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 GENDER IN ARCHITECTURE

9

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

UNIT III PLACE AND ARCHITECTURE

9

Modernity, modern architecture and issues of particularity, place and context - Critical Regionalism and architectures of resistance- Phenomenology in architecture- placemaking.

UNIT IV MEANING IN ARCHITECTURE

12

Architecture as communication and representation- introduction to linguistic concepts of semiotics, structuralism, post structuralism and deconstruction- debates on modern, postmodern and deconstructivist architecture with reference to these concepts- Conditions of late capitalism- Society of spectacle- Architecture as spectacle and seduction.

UNIT V ARCHITECTURE IN THE AGE OF GLOBALISATION AND DIGITAL TECHNOLOGY

9

Influence of globalisation and digital revolution on architectural processes- global/ regional debates- contemporary issues in architecture in India.

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 future practice/ research/ teaching.

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, An 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,
10. Ian Borden & Jane Rendell, (ed), Intersections, Routledge 2000
11. Paul Allan Johnson, Theory of Architecture, Routledge 2000
12. Christian Norberg Schulz- Towards a Phenomenology of Architecture, Rizzoli New York, 1980
13. William J. Mitchell, City of Bits: Space, Place and the infobahn, MIT Press, 1996
14. Harry Francis Mallgrave and David Goodman, An Introduction to Architectural Theory- 1968 to the present, Wiley Blackwell 2011

AA7004

EMERGING PRACTICES IN HOUSING

L T P/S C

3 0 0 3

OBJECTIVE

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

UNIT I INTRODUCTION

9

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

9

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

6

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

6

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

15

Design strategies in the context of Indian metropolitan cities will be explored through case studies

TOTAL:45 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

AA7005

GIS MODELLING IN URBAN PLANNING

L T P/S C

3 0 0 3

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.

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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

AA7006

MATERIAL CONSERVATION

L T P/S C
3 0 0 3

OBJECTIVES

- To study materials, structural systems, buildings and elements produced by historical technologies in order to develop understanding of their evolutionary, chronological and stylistic context.
- To use this understanding to outline causes of deterioration and repair as well as look at the remedial and preventive measures that need to be taken to preserve the building fabric.

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

AA7007

SERVICES IN HIGH RISE BUILDINGS

L T P/S C

3 0 0 3

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

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