

M.ARCH SYLLABUS AND CURRICULUM

2013 REGULATION - FULL TIME

APPLICABLE FOR REGULATION 2018

SEMESTER - I

S.No.	Code No	Course Name	L	P	S	C
THEORY						
1.	YAR101	Emerging Practices in Housing	3	0	0	3
2.	YAR102	Appropriate Materials and Technology for Sustainable Architecture	3	0	0	3
3.	YAR103	Advanced Studies in Regional and Vernacular Architecture	3	0	0	3
4.	YAR104	Services in High rise Buildings	3	0	0	3
STUDIO						
5.	YAR105	Architectural Design Studio –I (Housing)	0	0	16	8

Total No. of Credits: 20

Total No. of Hours :28

SEMESTER - II

S.No.	Code No	Course Name	L	P	S	C
THEORY						
1.	YAR201	Contemporary Theories and Trends	3	0	0	3
2.	YAR202	Research Methodology	3	0	0	3
3.	YAR203	Elective I	3	0	0	3
THEORY CUM STUDIO						
4.	YAR204	Digital Design Process in Architecture	2	2	0	3
5.	YAR205	Building Management Systems	2	2	0	3
STUDIO						
6.	YAR206	Architectural Design studio II –(large scale projects such as campus, airport)	0	0	16	8

Total No. of Credits : 23

Total No. of Hours:33

SEMESTER - III

S.No.	Code No	Course Name	L	P	S	C
THEORY						
1.	YAR301	Sustainable Landscape Design	3	0	0	3
2.	YAR302	Heritage Conservation Planning	3	0	0	3
3.	YAR303	Urban Design Practices	3	0	0	3
THEORY CUM STUDIO						
4.	YAR304	Elective II	2	2	0	3
STUDIO						
5.	YAR305	Dissertation	0	0	6	3
6.	YAR306	Architectural Design Studio –III (Urban Planning& Design Studio -Urban Design, Conservation, Environmental Planning, Landscaping,)	0	0	16	8

Total No. of Credits :23**Total No. of Hours :35****SEMESTER - IV**

S.No.	Code No	Course Name	L	P	S	C
1.	YAR401	Thesis				14
Total No. of Credits						80
Total no of credits required for the award of the degree						80

LIST OF ELECTIVES**ELECTIVE-I**

S.No.	Code No	Course Name	L	P	S	C
1.	YAR203 A	Advanced Materials and Construction Technology	3	0	0	3
2.	YAR203 B	Architecture and Critical Theory	3	0	0	3
ELECTIVE-II						
3.	YAR 304 A	Energy Efficient Architecture	2	2	0	3
4.	YAR 304 B	Energy Simulation and Modeling	2	2	0	3
L- Lecture P- Practical S- Studio C- Credits						

YAR101 EMERGING PRACTICES IN URBAN HOUSING

3 0 0 3

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

10

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

10

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

9

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

Total: 45 Hours

REFERENCES

1. Manuel Gausa and Jaime Salazar; 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

**YAR102 APPROPRIATE MATERIALS AND
TECHNOLOGY FOR SUSTAINABLE ARCHITECTURE**

3 0 0 3

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 Hours

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 Echavarria; Portable Architecture- and unpredictable surroundings; Page One Publishing Pvt. Ltd.; 2005

YAR103 ADVANCED STUDIES IN REGIONAL AND VERNACULAR ARCHITECTURE 3 0 0 3

UNIT I - INTRODUCTION 5

Brief introduction to vernacular architecture in global context – concepts and approaches in the study of vernacular architecture.

UNIT II - VERNACULAR ARCHITECTURE IN INDIAN CONTEXT 8

The different vernacular architectural styles in India with examples.
Northern region – Kashmir Architecture , Eastern region – Bengal Architecture, Western Region – Gujarat and kutch architecture, Rajasthan havelis, Southern Region – Kerala and Chettinadu Architecture.

UNIT III - CONCEPTS AND PRINCIPLES IN VERNACULAR STYLE 12

Study and understand the concepts and principles of Indian vernacular styles in terms of climate response, materials and indigenous construction techniques followed.

UNIT IV - CASE STUDY OF AN IDENTIFIED SETTLEMENT 15

Detailed study of a traditional settlement and analyzing in terms of the above discussed concepts and principles.

UNIT V - SUITABILITY IN PRESENT CONTEXT 5

Discussion on the Suitability of the vernacular concepts in present context with examples.

Total: 45 Hours

REFERENCES

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.
2. Amos Rappoport, House, Form & Culture, Prentice Hall Inc. 1969.
3. V.S.Praman, Haveli - Wooden Houses & Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.
4. Kullrishan Jain & Minakshi Jain - Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad, 1992.
5. G.H.R. Tillotsum - The tradition of Indian Architecture Continuity, Controversy - Change since 1850, Oxford University Press, Delhi, 1989.
6. Carmen Kagal, VISTARA - The Architecture of India, Pub: The Festival of India, 1986.

UNIT I - INTRODUCTION 3

General introduction to Services in both horizontal spread and vertical rise layouts- Standards of high Rise buildings- Aspects and Integration of services- Relative costs- 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.

UNIT III - HVAC, Electrical and Mechanical Systems 15

Natural and Mechanical Ventilation systems- Air conditioning systems and load estimation- Planning and design for efficiency- Automation and Energy Management. Natural lighting systems- Energy efficiency in lighting systems- load and distribution- Planning and Design for energy efficiency- Automation. Types of elevators, systems and services- Lobby design- Escalators - safety principles.

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.

UNIT V - CASE STUDIES 12

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

Total: 45 Hours

REFERENCES

1. A.F.C Sherratt, Airconditioning and Energy Conservation, The Architectural Press, London, 1980.
2. National Building Code.
3. Handbook for Building Engineers in Metric systems, NBC, New Delhi, 1968.
4. Philips Lighting in Architectural Design, McGraw-Hill, New York, 1964.
5. William H. Severns and Julian R. Fellows, Air-conditioning and Refrigeration, John Wiley and Sons, London, 1988.

Objective:

To identify and address the issues of Housing in both urban and rural context through precedent studies; literature review; case studies, etc.,. The objective also includes the study of the impact of globalization, real estate development, legal issues involved, policy and infrastructure development.

The design problem shall include the horizontal spread or vertical rise housing projects including by critically analyzing the standards, services, legal issues involved, the principles and concepts in the present trend and the current technological development.

Total: 240 Hours

YAR 201- CONTEMPORARY: THEORIES AND TRENDS 3 0 0 3

UNIT I - OVERVIEW OF WORLD ARCHITECTURE SINCE 1970 6

Chronological Development leading to the High-tech architecture also known as Late Modernism or Structural Expressionism, Post Modernism and Deconstructivism.

UNIT II - CRITICAL REGIONALISM 8

The idea of critical regionalism - Works of Architects: Studio Granda, Eduardo Souto de Moura, Mazharul Islam, Alvaro Siza, Rafael Moneo, Glenn Murcutt, Ken Yeang, Juhani Pallasmaa, Wang Shu, Juha Leiviskä, Peter Zumthor, Carlo Scarpa.

UNIT III POST-MODERN FUTURISTIC ARCHITECTURE 10

Postmodern architecture began as an international style - Continues to influence present-day architecture. Ideas and works of Architects: Cesar Pelli, Santiago Calatrava, Archigram, Louis Armet, Welton Becket, Arthur Erickson, Future Systems, John Lautner, Anthony J. Lumsden, Wayne McAllister, Oscar Niemeyer, William Pereira, Patricio Pouchulu, Eero Saarinen.

UNIT IV ANALYSIS OF ARCHITECT'S WORKS 15

Canonical architect's buildings that have exerted significant influences on the development of architecture will be studied in detail. Analysis of a building through drawings, text, bibliography and a physical model in a format ready for documentation and exhibition.

UNIT V SEMINAR PRESENTATION 6

Student's 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 Hours

REFERENCES

1. Paul Allan Johnson. Theory of Architecture, Routledge 2000.
2. Kenneth Frampton. Modern Architecture since 1900.
3. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000.
4. Bryan Lauson- How Designers Think, Architectural Press Ltd., London 1980.
5. Tom Heath- Method in Architecture, John Wiley & Sons, New York, 1984.
6. Christopher Alexander, Pattern Language, Oxford University Press.

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 Hours

REFERENCES

1. Linda Groat and David Wang; Architectural Research Methods;15
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
6. Amos Rapoport; House, form and culture;
7. Christopher Alexander; Pattern Language
8. Diagram Diaries; Peter Eissenman;

YAR 203-A ADVANCED MATERIALS AND CONSTRUCTION TECHNOLOGY

3 0 0 3

UNIT I – MODERN MATERIALS 6

Dry wall construction, Special Use of waste products (fly ash, micro silica) and industrial by-products in concrete making- Self compacting concrete - reinforced polymers – Geo-textiles and geo-synthetics – nano materials.

UNIT II – MODERN CONSTRUCTION METHODS 12

Tall buildings structural systems – Rigid frames – Braced frames – Shear wall – Buildings – Wall frame buildings – Tubular buildings – Tube-in tube buildings – Outrigger braced system – Types – single, double & multilayered grids – two way & three way space grids, connectors, Grids – Domes - various forms. Examples of tensile membrane structures – types of pneumatic structures. Biomimetics - Definition, Replicating natural manufacturing methods as in the production of chemical compounds by plants and animals; Mimicking mechanisms found in nature, Imitating organizational principles from social behavior of organisms; Examples: Spider-silk as a substitute for steel, Lotus effect in self-cleansing glass, Dinosaur spine in bridge design, Lily pad structure, termite mound cooling system, swarm theory, aerodynamic structures etc.

UNIT III – PREFABRICATION AND CONSTRUCTION TECHNIQUES 12

Modular co-ordination, standardization and tolerances-system of prefabrication. Pre-cast concrete manufacturing techniques, Moulds –construction design, maintenance and repair. Pre-casting techniques - Planning, analysis and design considerations - Handling techniques - Transportation Storage and erection of structures. Joints -Curing techniques including accelerated curing such as steam curing, hot air blowing etc., -Test on precast elements - skeletal and large panel constructions - Industrial structures. Pre-cast and pre-fabricating technology for low cost and mass housing schemes. Small pre-cast products like door frames, shutters, Ferro-cement in housing - Water tank service core unit. Quality control - Repairs and economical aspects on prefabrication.

UNIT IV – DEMOLITION 6

Advanced techniques and sequence in demolition and dismantling

UNIT V – SAFETY PRACTICES IN CONSTRUCTION 9

Construction accidents - Construction Safety Management: - Environmental issues in construction - occupational and safety hazard assessment. Safety Programmes - Job-site assessment - Safety in hand tools- Safety in grinding- Hoisting apparatus and conveyors- Safety in the use of mobile cranes-Manual handling- Asbestos cement roofs-Safety in demolition work- Trusses, girders and beams- First- aid- Fire hazards and preventing methods-Interesting experiences at the construction site against the fire accidents - earthquake resistant design of buildings.

Total: 45 Hours

REFERENCES

1. Richard J. Coble, Jimmie Hinze and Theo C. Haupt, Construction Safety and Health Management, Prentice Hall Inc., 2001.
2. Hand Book on Construction Safety Practices, SP 70, BIS 2001.
3. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.
4. John Fernandez, Material Architecture, Architectural Press, UK.
5. Rodney Howes, Infrastructure for the built environment, Butterworth Heineman.
6. Peurifoy, R.L., Ledbette. W.B., Construction Planning, Equipment and Methods, McGraw Hill Co., 2000.
7. Jimmy W. Hinze, Construction Safety, Prentice Hall Inc., 1997

UNIT I - INTRODUCTION 6

Architectural Theory and practice- Relation between theory and practice. Traditions in/of architectural theory. Critical Theory. Qualities and challenges of critical theory.

UNIT II POWER AND BUILT ENVIRONMENT 10

Forms of power. Power and knowledge. Panopticon. Colonialism as a form of dominance. Colonialism in India. Production of Indo-Saracen architecture. Ideas of segregation, control and surveillance in colonial towns. Discussing New Delhi as a part of imperial vision. Idea of Ghetto, surveillance and control in contemporary cities.

UNIT III ENCOUNTERING MODERNISM/MODERNITY 10

Phenomenology and architecture. Architecture and sense of place. Fragmentation and Nihilism as conditions of modern society. Counter claims. Encountering the idea of functionalism - Semiotic and Deconstruction as a critical tool. Architecture of Resistance. The idea of critical regionalism.

UNIT IV SPECTACLE AND ARCHITECTURE 10

Society of spectacle. Spectacle as a form of seduction. Debating aesthetisation of architectural issues. Critiquing learning from Las Vegas. World in a shopping wall. Thematic environments. Theme parks and privatization of public spaces. Visual regime in architecture. Media and architecture.

UNIT V ISSUES IN ARCHITECTURE 9

Gender and space. Heritage and politics of memory. City as contested geography. Technology and Architecture.

Total: 45 Hours

REFERENCES

1. Neil Leach (ed) Rethinking Architecture, Routledge 2000
2. Paul Allan Johnson. Theory of Architecture, Routledge 2000
3. Michael Hays (ed) Architectural Theory since 1960, MIT Press, 2000
4. Anthony king, Urban Development in Colonialism
5. Nazzar Al Sayaad (ed) Forms of Dominance,
6. Lawrence vale. Architecture and Nationalism and identity,
7. Anil Lomba, Colonialism, 2000
8. Thomas Metcalf Imperial vision, Oxford
9. Neil Leach, Aesthetics and Anesthetics,
10. Guy Debord. Society of Spectacle.

Unit –I INTRODUCTION 10

Contemporary theories in Digital Architecture Evolution of Digital Architecture – Driving forces behind Digital Architecture – Digital Output and its process.

Unit – II SOLIDS, SURFACES & VIRTUAL MEDIA 10

Works of Zvi hecker – Shape Grammar – Hyper Surfaces – Interactive Architecture – Virtual Architecture .

Unit- III Genetic Algorithms: 20

Fractal theory – Veronoi patterns – Cellular Automata-Linden Mayor systems – Basic Concepts and its application.

Unit – IV IDEAS AND WORKS OF CONTEMPORARY ARCHITECTS 10

Greg Lynn, Reiser + Umemotto , Lars spuybroek/NOX Architects, UN Studio, Diller Scofidio, Dominique Perrault, Aranda Lasch, Herzog and De Meuron, Neil Denari, Michael Hasmeyer.

Unit – V BIOMIMICS 10

Concept of Biomimics - Biomimicry and its application – Project based on Biomimics – Evolution of Biomimics in Architecture – Design Assignment based on Biomimics (either Digital or Manual) Lab Classes in Scripting and Rhino + Grasshopper.

Total: 60 Hours

REFERENCES:

1. Animate from – Greg Lyres
2. Chaos making of new science – James Gleict
3. The self made taps by: Patters formed in Nahre - Philip Ball.
4. Finding forms : Tourrds an Architecture of the Minimal – Frei otto and Bodo Rasch.
5. Godel, Escher and Bach : An external Golden Baid – Douglar R.Hoftstader.
6. Emergence Staner Johnson
7. The Autopiesis of Architecture – Patricit Schumacher.

UNIT - 1 INTRODUCTION 10

Introduction to Basics of Building Management Systems (BMS), Integrated Building Management Systems (IBMS) and Building Automation System (BAS). Scope and Importance of Building Management Systems. Introduction to Facilities Management (FM) Building Information Modeling (BIM), Management Information systems (MIS). Introduction to Maintenance systems - Predictive Maintenance (PdM) , Corrective Maintenance.

UNIT- 2 ASPECTS OF BUILDING MANAGEMENT SYSTEM 10

HVAC management –Central plant optimization (CPO) , Chillers, Cooling towers, VAV, AHU, Exhaust systems, Lighting management, Electrical systems management, Plumbing and Fire fighting systems management. Safety and Security systems management – Alarm systems, Access control systems, Closed circuit television, Intruder Alarm, Perimeter protection, Safety systems.

UNIT - 3 CONTROL SYSTEMS, PROTOCOLS AND SERVICE INTEGRATION 16

Controllers-Types and functions, Pneumatic control systems, electric control systems. Computerized control systems, Direct digital control, Sensors and Actuators-Types and functions. Occupancy, Integration using Internet protocol. Open protocols Vs Proprietary systems, BacnetVs Lonmark, Fully Integrated system Vs Standalone operations. Integration of services – water pump monitoring & control - Control of Computerized HVAC Systems –Direct Digital Control - chillers, pumps, BTU monitoring & control – IBMS system and its components – centralized control equipments – sub- station and field controllers – field sensors.

UNIT - 4 TRENDS IN BUILDING MANAGEMENT SYSTEM 12

Energy Management and Control Systems (EMCS), Management Information systems (MIS) Building Energy Management systems (BEMS), BMS retrofitting, BMS towards sustainability and green practices. Intelligent buildings, Role of BMS in energy efficiency and maintenance cost. Case study, examples.

UNIT – 5 INTELLIGENT MANAGEMENT SYSTEMS AT URBAN LEVEL 12

BMS Future cities, Intelligent/Smart cities, Smart grids, Demand driven distribution, District cooling and Heating, Wireless Building Technology, Intelligent wireless street lighting system, Intelligent Traffic Management systems, Intelligent guidance systems.

Total: 60 Hours**REFERENCES**

1. Smart Buildings Systems for Architects, Owners and Builders -By James M Sinopoli.
2. Intelligent Buildings and Building Automation - By Shengwei Wang.
3. Introduction to Building Management - By D. Coles, G. Bailey, R E Calvert.
4. Building Energy Management Systems: Application to Low-Energy Hvac and Natural Ventilation Control- By G. J. Levermore.
5. Smart grid home- By Quentin Wells

YAR 206 ARCHITECTURAL DESIGN STUDIO – II

0 0 16 8

Large scale projects such as campus design, airport, civic centre, urban recreational centers, mixed use high rise development.

Application of building management system, services details are to be incorporated in the detailed design drawings

Total :240 Hours

UNIT I - ECOLOGY AND LANDSCAPE**6**

Concept of Ecosystem: General Structure and Function - Energy flow, Primary & Secondary Production - Types of Biogeochemical cycles; Carbon cycle, Global water cycles, nitrogen cycle bioaccumulation and biomagnifications and - Analysis and evaluation. Concept of ecosystem services.- Types of Ecosystems Environmental Impact Assessment and the Environmental Impact Statement: Theory and Practice. Illustrative examples from India to demonstrate the degree of effectiveness. The role of Environmental Legislation and the Ministry of Environment and Forests.

UNIT II - PLANTS AND DESIGN**10**

Basic plant structure/morphology/anatomy - Basic plant functions/growth & development / physiology - Principles of taxonomy / classification, identification and naming Familiarity with local flora. Ecological and Botanical considerations in landscape design. Plant data sheet.

Planting as a design element for structuring the landscape. Structural and visual characteristics of plants. Principles of visual composition. Plant association. The role of plant material in environmental improvement, (e.g. soil conservation, modification of microclimate).

UNIT III - CULTURAL AND HISTORIC LANDSCAPE**10**

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 Mughal India – Tomb and pleasure garden – Mughal concepts of site planning. Western expression of Islam – Spain Alhambra and Generalife, Granada.

UNIT IV- CONTEMPORARY LANDSCAPE**10**

Industrialization and urbanization – impacts and development of the concept of public open spaces, open space development in new towns, parks movement. Study of selected works of modern landscape architects. Frederick Law Olmsted, *Martha Schwartz*, *Burle Marx*, *Ravindra Bhan* and other pioneers.

UNIT V- CASE STUDY**9**

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

Total: 45 Hours

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.

UNIT – I INTRODUCTION TO ARCHITECTURAL CONSERVATION 6

Introduction to architectural conservation of heritage buildings, environmental conservation, purpose & scope of conservation projects in Indian context – Role of architect in such programmes, values & ethics of conservation programme- involvement of community & social organisations – public participation – conflict and compatibility between conservation and development.

UNIT – II PROCEDURE FOR CONSERVATION 10

Procedure for listing of structures for conservation.
Inventories, inspection, documentation, degree of intervention for prevention of deterioration, prevention of existing state, consolidation of the fabric, restoration, rehabilitation, reproduction, reconstruction , etc. – to study the structural elements of buildings such as beams, arches, and domes, walls, piers & columns, foundation etc, causes of decay in buildings by natural and human factors, The role of conservation architect & his team.

UNIT – III STRUCTURAL CONSERVATION 10

Behavioral properties of traditional construction materials- various methods and techniques involved in structural conservation, case studies and examples.

UNIT – IV LEGISLATION AND INSTITUTIONS 11

Special legislation – Central and State. New concepts and emerging trends in conservation. Methods and procedures adopted by agencies such as UNDP, UNESCO, ICOMOS, ICCROM, ASI, INTACH.

UNIT- V CASE STUDIES 8

Case studies of conservation projects in Indian and International context. Appraisal of conservation project in view of the above issues- success & failure – reasons for it.

Total: 45 Hours

REFERENCES

1. Conservation and development in historic towns & cities – Pamela Ward Press Ltd.
2. Planning for conservation – Kain Roger – St.Martin N-Y 1981.
3. Character of towns – An approach to conservation – Worskett Roy, Arch. Press – London.
4. Guidelines for conservation by INTACH.
5. Conservation of Historic Buildings, Sir Bernard M. Felidan, - Arch Press, 1982.
6. Gerald Glenn, “Presentation & Rehabilitation” (1996), ASTM International.
7. History of Architectural conservation, (1st Pub 1999, Reprint 2005) – Butterworth, Oxford, UK.

UNIT I INTRODUCTION TO URBAN DESIGN THEORY 10

City as a three – dimensional entity, study of volumes & open spaces, a brief Historic review of the development of the urban design discipline and principles. Historic developments of streets and squares.

UNIT II ELEMENTS OF URBAN DESIGN 10

Urban form as determined by the inter-play of masses, voids, building typology, scale, harmony, symmetry, colour, texture, light & shade, dominance, height, urban signage & graphics, organization of spaces & their articulation in the form of squares, streets, vistas & focal points, image of the city & its components.

UNIT III URBAN DESIGN METHODOLOGIES 10

Methods of urban design surveys, documentation and representation. Cognitive mapping – contemporary and traditional, architectural expressions. Seminar presentation on transport planning in urban design.

UNIT - IV URBAN RENEWAL & DEVELOPMENT 8

Historic overview of urban renewal, Development strategies for regeneration of inner city areas, recycling, renewal, etc. Case studies of urban renewal. Adaptive reuse and Brown Field projects in India and abroad. Infrastructure up gradation, economic regeneration, financing and management of urban renewal schemes. Institutional framework for urban conservation and renewal strategies in India.

UNIT V CASE STUDIES 9

Legal & administrative aspects, policies, charters, case studies of proposals for urban design projects from India & Abroad.

Total: 45 Hours

REFERENCES

1. Jon Lang, “Urban design” – a typology pf procedures & products 2005, Glsevier, North America.8
2. Gcoffrey Broadbent, “Emerging concepts in Urban Space Design-(1995), Jayker & ravel.
3. Cliff Monghtin, “UD-Street & Squace,” (2003), Archtitectural Press.
4. Jonathan Barnett, “Designing cities without designing building”, (1982), Harper & Row, New York.
5. Edmond Bacon, “Design of cities”, (1976), revised edition, Viking Penguin Inc; U.S.A.

UNIT I PASSIVE DESIGN 10

Significance of Energy Efficiency in the contemporary context, Simple passive design considerations involving Site Conditions, Building Orientation, Plan form and Building Envelope -Heat transfer and Thermal Performance of Walls and Roofs.

UNIT II ADVANCED PASSIVE ARCHITECTURE- PASSIVE HEATING 15

Direct Gain Thermal Storage of Wall and Roof - Roof Radiation Trap - Solarium - Isolated Gain.

UNIT III PASSIVE COOLING 10

Evaporative Cooling - Nocturnal Radiation cooling - Passive Desiccant Cooling – Induced Ventilation - Earth Sheltering - Wind Tower - Earth Air Tunnels.

UNIT IV DAY LIGHTING AND NATURAL VENTILATION 10

Daylight Factor - Daylight Analysis - Daylight and Shading Devices - Types of Ventilation - Ventilation and Building Design.

UNIT V CONTEMPORARY AND FUTURE TRENDS 15

Areas for innovation in improving energy efficiency such as Photo Voltaic Cells, Battery Technology, Thermal Energy Storage, Recycled and Reusable Building materials, Nanotechnology, smart materials and the future of built environment, Energy Conservation Building code.

Total: 60 Hours

REFERENCES

1. Manual on Solar Passive Architecture, IIT Mumbai and Mines New Delhi, 1999
2. Arvind Krishnan & Others, “ Climate Responsive Architecture”, A Design Handbook for Energy Efficient Buildings, TATA McGraw Hill Publishing Company Limited, New Delhi, 2001
3. Majumdar M, “Energy-efficient Building in India”, TERI Press, 2000.
4. Givoni .B, “Passive and Low Energy Cooling of Buildings”, Van Nostrand Reinhold, New York, 1994
5. Fuller Moore, “Environmental Control Systems”, McGraw Hill INC, New Delhi - 1993
6. Sophia and Stefan Behling, Solpower, “The Evolution of Solar Architecture”, Prestel, New York, 1996
7. Patrick Waterfield, “The Energy Efficient Home: A Complete Guide”, Crowood press ltd, 2011.
8. Dean Hawkes, “Energy Efficient Buildings: Architecture, Engineering and Environment”, W.W. Norton & Company, 2002
9. David Johnson, Scott Gibson, “Green from the Ground Up: Sustainable, Healthy and Energy efficient home construction”, Taunton Press, 2008

UNIT I - INTRODUCTION TO ENERGY 10

Definition and units of energy, power, Forms of energy, Conservation of energy, second law of thermodynamics, Energy flow diagram to the earth. Origin of fossil fuels, time scale of fossil fuels, Renewable Energy Resources, Role of energy in economic development and social transformation.

UNIT II - INTRODUCTION TO SOLAR ENERGY 10

Solar Spectrum, Solar Time and angles, day length, angle of incidence on tilted surface; Sunpath diagram; Shadow angle protractor; Solar Radiation: Extraterrestrial Radiation; Effect of earth atmosphere; Estimation of solar radiation on horizontal and tilted surfaces; Measurement of Solar radiation, Analysis of Indian solar radiation data and applications.

UNIT III - INTRODUCTION TO ENERGY MODELING 10

Definition of energy modeling, Answers that energy modeling provide, Building modeling tools: Daylighting/ lighting modeling, Computational fluid dynamics(CFD), Building component analysis, HVAC analysis, Building thermal analysis, Whole building energy simulation programs.

UNIT IV - INTERFACES AND SOFTWARE PACKAGES 15

Introduction to interfaces of energy modeling software packages, DOE2, ENERGY PLUS, ECOTECH, CLIMATE CONSULTANT, HEED, BERS, GREEN BUILDING STUDIO.

UNIT - V CASE STUDY 15

Literature case study and live case study, Energy modeling of a residential building.

Total: 60 Hours

REFERENCES

1. Eddy Krygiel., Bradley Nies, Green BIM Wily publishing, Canada, 2008.
2. Advanced Energy Design Guide For Small Office Buildings, American Society of Heating Refrigerating and Airconditioning, USA 2004.
3. Davies, Morris Grenfell, Building Heat Transfer, Wiley, 2008.
4. Underwood, Chris, Modelling Methods For Energy In Buildings, WileyBlackwell, 2008.
5. International Energy Conservation Code 2003, International Code Council.
6. Baker, Nick, Energy And Environment In Architecture, Taylor & Francis, 2000.
7. Dobbelsteen, Andy van den, Smart Building In A Changing Climate, Island Press, 2009.

YAR 305 DISSERTATION

0 0 6 3

Topics related to various aspects of Architecture would be chosen in consultation with faculty members, comprehensively researched, and findings presented in a series of seminars by individual students.

The materials would be documented and formally presented as a Dissertation at the end of the semester

Total: 90 Hours

YAR 306 ARCHITECTURAL DESIGN STUDIO –III

0 0 16 8

Large scale architectural design projects with the scope includes urban design and landscape issues.

Projects such as neighborhood development, redevelopment, urban renewal projects, study documentation, analysis and proposal for inner city development, historic precinct development with the conservation and landscaping details.

Total: 240 Hours

YAR 401 THESIS

0 0 0 14

Thesis may be either **THESIS BY DESIGN** or **THESIS BY RESEARCH**

THESIS BY DESIGN

The design thesis is an independent topic explored and defined by the student in the previous semester. Students continue to take forward the thesis areas, leading to the development of a clear design proposal to be supervised by a faculty team and evaluated by an external jury.

The tutorial will assist the students to strengthen the theoretical base of the thesis and analyze relevant successful design demonstrations through case studies.

THESIS BY RESEARCH

The thesis by research is an independent research on a topic defined by a student, to be completed in the form of a comprehensive report under the supervision of an advisor and evaluated by an external jury. The tutorial will assist the student in research methodologies, conducting of surveys, identifying case studies etc. Types of research: descriptive vs Analytical, applied vs fundamental, quantitative vs qualitative, conceptual vs empirical research Introduction to urban research, Research design methodology, Descriptive research, Explanatory research, diagnostic, experimental research.

Total: 525 Hours