

**B.S.ABDUR RAHMAN  
UNIVERSITY**

B.S. ABDUR RAHMAN INSTITUTE OF SCIENCE & TECHNOLOGY  
(Estd. u/s 3 of the UGC Act, 1956)

(FORMERLY B.S.ABDUR RAHMAN CRESCENT ENGINEERING COLLEGE)  
Seethakathi Estate, G.S.T. Road, Vandalur, Chennai - 600 048.



**SYLLABUS 2016**  
**FOR**  
**M .ARCH. DEGREE PROGRAM M ES**

**NEED FOR THE PROGRAM :**

To respond to the increasing competition in the professional procurement of building and the growing demand for specialist knowledge & skills in the pursuit of architectural excellence, this programme focuses on development & application of specialist architectural knowledge & advanced design techniques & technologies.

**PROGRAM OUTLINE:**

- The master of architecture is a rigorous and comprehensive program, preparing graduates for the full range of professional activities in the field of architecture.
- The Masters programme **aims to provide solid base of knowledge in history, theory, technology, the social environment, and professional practice.**
- Studios are the focus of the program and are supported by non studio courses committed to developing independent thinking and resolving design issues

**COURSE OUTLINE:**

- In this curriculum, we have **three coordinated design studios**, one in each semester.
- Each coordinated semester has a different **set of objectives and combination of non studio classes.**

**AIM :**

Through integration of different modules and series of progressive sessions, the programme aims to produce architects who are competent to design a building by accomplishing further advances in the work of contemporary practice.

**OBJECTIVES:**

- Appreciating and recognizing the interdependence between the people & built environment with broad and diverse implications at every scale.
- **Understanding design concepts &** the real world applications from multiple perspectives.
- Enables the students to study and understand the **tools and technologies associated with contemporary design practices.**

**CURRICULUM AND SYLLABUS FOR M .Arch  
(Four Semesters/ Full Time)**

**CURRICULUM  
SEM ESTER I**

<b>S.</b>	<b>Course</b>	<b>Course Name</b>	<b>Lecture</b>	<b>Studio/ Credit</b>	
<b>No. Code</b>				<b>Practical</b>	
1	ARM 1101	Architectural Reading I	3	0	3
2	ARM 1102	Technical studies in practice	3	0	3
3	ARM 1103	Digital Representation	2	8	6
<b>Studio</b>					
4	ARM 1105	Architectural Design Studio I	0	14	10
			<b>Total Credit</b>		<b>22</b>

**SEM ESTER II**

<b>S.</b>	<b>Course</b>	<b>Course Name</b>	<b>Lecture</b>	<b>Studio/ Credit</b>	
<b>No. Code</b>				<b>Practical</b>	
1	ARM 1201	Architectural Reading II	3	0	3
2	ARM 1202	Advanced building services	3	0	3
3	ARM 1203	Performance & Energy Evaluation	2	8	6
4	ARM 12XX	Elective - I	3	0	3
<b>Studio</b>					
5	ARM 1205	Architectural Design Studio II	0	14	10
			<b>Total Credit</b>		<b>25</b>

**SEM ESTER III**

S.	Course	Course Name	Lecture	Studio/	Credit
No. Code				Practical	
1	ARM 2101	Architectural Reading III	3	0	3
2	ARM 2102	Project Assessment & Management	3	0	3
3	ARM 2103	Research methodologies	3	0	3
4	ARM 21XX	Elective II	3	0	3
<b>Studio</b>					
5	ARM 2105	Architectural Design Studio III	0	14	10
			<b>Total Credit</b>		<b>22</b>

**SEM ESTER IV**

S.	Course	Course Name	Lecture	Studio/	Credit
No. Code				Practical	
1	ARM 2201	Architecture Thesis	0	32	18

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**LIST OF ELECTIVES**

**LIST OF ELECTIVE - I:**

**Semester II**

1. ARM 1211 Lighting & Ventilation
2. ARM 1212 New Age Materials & Techniques

**LIST OF ELECTIVE - II:**

**Semester III**

1. ARM 2111 Disaster resilient design
2. ARM 2112 Urban Design
3. ARM 2113 Energy Efficient design

**CURRICULUM & REGULATION FRAMEWORK**

The first semester will provide an insight into the Interior Design concepts, principles, materials & technologies presenting the different contexts in which these can be applied.

History & Theory I will expose the students to understand various traditional & contemporary practices. Historical perspectives will expose the students to understand the traditional practices.

Design Studio I will lay emphasis on the Interior Design Program which challenges the students to think critically in their design of space and to develop solutions that not only enhance quality of life, but also protect the health, safety, and welfare of users as prescribed in the various codes and regulations that govern the work of interior designers. It is also the culmination and application of knowledge gained about the principles and fundamentals studied throughout the first semester theory and theory cum studio courses.

<b>SEM ESTER I</b>	<b>Credits</b>
<b>Architectural Design Studio - I</b>	<b>10</b>
Architectural Reading I	3
Technical studies in Practice	3
Digital Representation	6
<b>Total Credits</b>	<b>22</b>

The second semester covers the aspects of development of landscape through understanding of the natural and cultural factors of the place, building services and their integration in architectural design.

The studio explores the application of understanding and / or resolving of basic landscape design issues and elements through study of existing landscapes.

Elective courses offered in this semester allow the students to pursue their subject interests.

<b>SEM ESTER II</b>	<b>Credits</b>
<b>Architectural Design Studio – II</b>	<b>10</b>
Architectural Reading II	3
Advanced building services	3
Performance & Energy Evaluation	6
Elective - I	3
<b>Total Credits</b>	<b>25</b>

<b>SEM ESTER III</b>	<b>Credits</b>
<b>Architectural Design Studio – III</b>	<b>12</b>
Architectural Reading III	3
Project Assessment & Management	3
Research methodologies	3
Elective II	3
<b>Total Credits</b>	<b>24</b>

The Third semester will provide the knowledge of large scale projects and their services. The aspects of project management and choice of elective will explore more details in designing the projects of Architectural studio III.

The studio explores the application of understanding and / or resolving of issues in large scale projects and services through study of theory and theory cum studio subjects of this semester.

Elective courses offered in this semester allow the students to pursue their subject interests.

<b>SEM ESTER IV</b>	<b>Credits</b>
Architectural Thesis	18

**SEM ESTER I**

**AR M 1101 ARCHITECTURAL READING I**

**3 0 3**

This course offers Study of social, economic, political, and technological issues that influence contemporary interior design practice. It also surveys the significant developments in the design of interiors and furniture of worldwide design.

**THEORY OF DESIGN AND SYM BOLISM**

**109**

Defining design & aesthetics - The purpose of design, various fields of design - The nature of good design, Discussion on the theoretical basis to all present day design disciplines, relation between the tradition of architecture and aesthetic.

**RELATING THE SPACES, INTERIOR DESIGN AND AESTHETICS**

**10**

Issues of idea & theme as ordering mechanisms – of space, material, form, colour & light. Perception and response to visual phenomena. Gestalts principles. Design related cognitive learning. Colour theory & application to the interior environment. Appreciation of various arts; painting, murals sculpture, architecture etc. Interior Design in the context of other arts.

**THE WESTERN DESIGN M OVEM ENT**

**16**

Land mark events in the history of International design movement. Historical development of artefact Overview of the major styles like Regency, colonial, Art & crafts, Romanticism, Art Nouveau, Eclecticism, Art-Deco, Cubism, Post modernism, Late modernism and Deconstructivism, Various schools of thought and design emphasis.

**THE INDIAN DESIGN M OVEM ENT**

**9**

The modern movement and its impact on India. Shift from historical to modern methods of building spaces, Study of Interior Design in the Indian context, contemporary styles with particular reference to India, Indian elements of space making.

**TOTAL SESSIONS : 45**

**References:**

- Interior Design : Theory & process. Anthony Sully
- History of Interior Design – John Pile
- The Abrams Guide to Period Styles for Interiors – Judith Gura
- Furniture : World Styles from Classical to Contemporary. – Judith Miller.
- Jill Schaefer(Editor), The Sourcebook of Architectural & Interior Art, The Guild (INC), 2007
- Art Deco House Style an Architectural and Interior Design SB by Cranfield.

This subject is intended to equip the students with some knowledge in areas which are not covered otherwise in the curriculum.

EMPHASIS: Understanding Contracts and Tender documents

CONTENT:

- Role of an interior designer in a project
- His /her responsibilities and liabilities with respect to clients and society,
- His /her duties power and functions Professional work and scale of professional charges, mode of working and payments, phasing of Projects etc.
- Tendering, contracts and articles of agreement, execution of contract, appointment of clerk of Works, site supervisor, contractor and sub-contractor etc.
- Interiors as a response to social and technological forces
- User participation in design
- Occupant health & safety in interiors

**TOTAL SESSIONS : 45**

References:

- Professional Practice for Interior Designers. – Christine M Piotrowski,FASID, IIDA
- The Interior Design Business Handbook, Mary V Knackstedt
- The Interior Design Clients – The designer’s guide to building & keeping great Clientele – Thomas Williams
- The Business of Design – balancing Creativity & Profitability – Keith Granet
- Design Details for Health : Making the most of Design’s Healing Potential
- The Codes guidebook for Interiors – Sharon koomen Harmen, IIDA
- Architect + Entrepreneur – A field guide to building, branding & marketing.- Eric W Reinholdt



Each of the below mentioned topics shall be introduced in lecture periods and is to be dealt with subsequently in the studios in detail.

This course will focus most intensely on the general skills involved in exploring 3d spaces and constructed assemblages - representational (analog and digital), developing a fluency for visual thinking (through intensive practice), and then effectively communicating analytics or creativity through architectural conventions.

Course Objectives: integrating digital operational strategies into a design method

**CONTENT:**

The focus of teaching in this subject shall be as following,

- Animation soft wares & Advanced rendering & modeling soft wares
- Visualization: Introduction to Visualization tools in Architecture such as 3D software, Nurbs modeling, parametric modeling, BIM .
- Rendering: Introduction to rendering techniques including Material mapping, Lighting, Perspective.
- Presentation: Introduction to presentation tools & techniques for print and digital medium.

**TOTAL SESSIONS : 75**

**References:**

- Architectural Drawing, Rendow Yee,
- “The Necessity for Drawing”, Michael Graves
- “Translations from Drawing to Building”, Robin Evans
- Terzidis Kostas ,Algorithmic Architecture, Architectural Press , Oxford , 2006
- Helmut Pottmann, Michael Hofer and Axel Kilian (eds),
- Advances in Architectural Geometry, Vienna, 2008
- Helmut Pottmann, Michael Hofer and Axel Kilian (eds), Advances in Architectural Geometry, Vienna, 2008
- Cecil Balmond, Geometry, Algorithm, Pattern: The Serpentine Pavillion 2002,
- Digital Tectonics, ed Neil Leach, London ,Wiley-Academy, 2004. 132 Print. Alexander, C. (1964).
- Goodness of fit. In Notes on the Synthesis (pp. 15-28). Cambridge: Harvard University Press.

**Intent**

Design Studio I will lay emphasis on the design projects with Interior Design exercises done in detail. This challenges the students to think critically in their design of space and to develop solutions that not only enhance quality of life, but also protect the health, safety, and welfare of users as prescribed in the various codes and regulations that govern the work of interior designers.

It is also the culmination and application of knowledge gained about the principles and fundamentals studied throughout the first semester theory and theory cum studio courses.

**Content**

The Design exercise should reflect the inputs from other subjects. The design process may involve literature studies, case studies, site visits, data collections and analysis eventually resulting in an interior scheme where theme based design is emphasized.

**Studio Brief**

Two interior schemes of different functional types viz residential, hospitality, institutional (relating to education & health) and commercial (shopping malls), recreational, (theatres, clubs etc) and public use complexes (airports, bus terminals, railways stations) will form the major design assignments.

The design exercise should address issues such as institution character through interior environment, corporate image, economic factors & behavioural patterns; integration of commercial activity etc. Design portfolio should include furniture layout, electrical layout, false ceiling plan, partition designs & details, flooring plan, design of doors & windows, colour schemes etc, specifying materials usage and the related technical knowledge.

The design exercise should address issues like design language, visual coordination, culture, traditions and behavior patterns in the use of space.

**TOTAL SESSIONS : 180****References**

- Rethinking Design and Interiors: Human Beings in the Built Environment, By Sashi Caan.
- Interior Design -John Pile; Harr N.Abraham, Inc. Publishers.
- Interior design Illustrated; Francis.D.K.Ching.
- Time Saver standards for Interior Design & Space Planning – Joseph de Chiara, Julius Panero, and Martin Zelnic – 2003.
- The Interior Design Reference & Specification Book : Linda O Shea,Chris Grimley,Mimi Love.
- Lighting for Interior Design – Malcolm Innes

**SEM ESTER II**

**AR M 1201 ARCHITECTURAL READING II**

**3 0 3**

This course is an introduction to the social, cultural, economic, political and environmental conditions that created the styles of historical significance in the development of the discipline and profession of landscape architecture. The course will also survey the theories of 20 and 21st century built works as case studies and precedents for contemporary design.

**Outcome:**

At the completion of the course the students will be able to:

- Identify the design principles that define the major historical styles developed by various cultures throughout the world from pre history to modern design theory.
- Discuss the design theories developed by the practice of prominent 21st century landscape architects.

**INTERIOR LANDSCAPING**

**10**

Elements of interior landscape, Types of indoor plants, plant characteristics; size, biology, soil, moisture, light, nutrient, atmospheric conditions, growing medium, pests & diseases. Market survey & costs., Manual versions, automatic irrigation costing and installation of micro irrigation systems. Interior landscape application for residential, commercial and other public use spaces.

**LANDSCAPE THEORY**

**12**

An introduction to social and cultural dimensions of landscape. Dialogue on developing an analytical approach to the study of theory; developing an attitude towards critique and evaluation of choices for design decisions in varied contexts of space and time. Appreciation of scale in terms of garden, landscape and nature. An outline of the chronology of development and evolution of landscape and garden design in relation to art, architecture and city planning from the earliest period to the present day: towards a comprehensive and inclusive vision of Landscape Architecture.

**INDIAN TRADITIONS**

**9**

Ancient Indian traditions; siting of structures, complexes and cities; symbolic meanings and sacred value attributed to natural landscapes; traditional landscapes such as ghats, gardens, kunds, sacred groves etc. Landscape in myth and poetry. The comparative analysis of examples of landscape separated in time and space: siting, relationship to surroundings, use of landscape elements, function, scale, symbolism, etc.

**DEVELOPMENT OF LANDSCAPE DESIGN AND GARDENS**

**14**

Development of landscape design and gardens till the early 19th century: Detailed study of selected examples from Eastern, Central and Western traditions; Western Civilization: Europe; Italy, France, and England The middle-east: The Persian tradition and its far reaching influence Eastern Civilisation: China and Japan Ancient and medieval period in India; Mughal and Rajput Landscapes. Influences and linkages across cultures and traditions, e.g Chinese tradition and the English Landscape style, influence of Persian traditions towards the West and East. Colonial landscape development in India

**TOTAL SESSIONS : 45**

**References:**

- Illustrated History of Landscape Design, John Wiley and Sons, Inc., 2010
- “The Language of Landscape,” in Theory in Landscape Architecture: A Reader (Philadelphia: University of Pennsylvania Press, 2002)
- S. Swaffield. (2002) Theory in Landscape Architecture: A Reader, (Philadelphia: University of Pennsylvania Press).
- Geofery & Susan Jellicse: The Landscape Of man.
- Kaiser Harvey H: Landmarks In The Landscape Historic Architecture
- History Of Landscape Architecture: The Relation Of People To Environment, Tobey, George, Elsevier And Co. Ny
- Landscape Design : Theory & Practice – M P Rao
- Charles Correa : A place in the shade : The New Landscape & other essays.
- Garden History reference encyclopedia : Tom Turner
- The Experience of Landscape – Jay Appleton

**Learning Objectives:**

After successful completion of this course, student should be equipped: To develop awareness and understanding of Advanced Building Services employed in various complex buildings and address environmental issues related to these services. This course aims to understand the integration of services in the sustainable design solutions.

**Water supply & Plumbing systems in high rise buildings:****10**

Water supply & Plumbing systems in high rise building complexes and complex structures: Procurement, demand and distribution of water in large complexes. Quality of water consideration for different uses. Systems and equipment used in Treatment of water for distribution, recycling and reuse and specialized equipment used for this purpose. Identify special needs for a building typology-development. Case study/ies of such structures and reporting.

**Sanitation and Waste disposal systems in high rise buildings:****8**

Sanitation and Waste disposal systems in high rise building complexes and complex structures: Collection and disposal systems used in high rise buildings and complex structures. Effluent treatment plants and their efficiency, chemical properties of the treated effluent considering the source and end use. Concept of recycling and reuse of treated effluent. Rain water harvesting and similar methods of conserving water resources. Disposal of treated effluent into natural sources of water. Storm/rain/surface water estimation, collection systems and disposal.

**Mechanical & Communication systems****10**

Mechanical & Communication systems (elevators, escalators, conveyors, etc.). Security systems etc. in high rise building complexes, public buildings, Parking lots and complex structures like Hospitals, public transport terminals etc. Design parameters for determining the loads & requirement, Operation and maintenance of these Services. Case study/ies of such structures and reporting.

**Electrical and telecommunication systems****8**

Electrical and telecommunication systems in high rise building complexes public buildings, and complex structures like Hospitals, public transport terminals, IT complexes etc. Design parameters for determining the loads & requirement, Operation and maintenance of these Services. Case study/ies of such structures and reporting.

**Lighting, Heating, Ventilation & Air conditioning systems****9**

Lighting, Heating, Ventilation & Air conditioning systems in high rise building complexes, public buildings, Parking lots and complex structures like Hospitals, public transport terminals etc. Design parameters for determining the loads & requirement, Operation and maintenance of these Services. Passive & active ways of control of heat, light, humidity etc. for comfort conditions. Introduction to simulation software to determine comfort conditions in various spaces. Case studies of such structures.

**Required Readings:**

Environment and services – Peter Bucberry

ABC's of Air Conditioning – Ernest Tricomi

Heating and Air Conditioning of Buildings

Environmental Science – Smith Philips and Sweeney

Mechanical & Electrical Equipment in Buildings

Sanitation, Drainage, & Water Supply – Mitchell

Drainage & Sanitation – E. H. Blake

Heating & Hot Water Supply – Hall.

Architectural Acoustics By M. David Egan

Architectural Acoustics By Marshall Long

Overview:

As energy is becoming more precious, it is crucial for building sector to proactively design and operate high performance buildings. To achieve higher standards in building design and operation, a solid foundation of energy engineering and sustainability principles is essential.

This course builds essential knowledge of building energy and sustainability, and provides necessary background to use building energy simulation software tools. The goal of this course is to use building performance modeling as an investigative tool to improve overall energy efficiency of the building.

Course Objectives

- To recognize various building energy simulation tools, types and capabilities.
- To learn underlying concepts, modeling inputs and analysis methods of building components
- To model building performance using energy simulation software.
- To interpret simulation results and troubleshoot errors.
- To use measured building energy data to calibrate simulation model

Energy Crisis, Codes & Milestones

Global trends, "Peak Oil 2020," building energy use & challenges

History & definitions of energy standards, codes and protocols

Energy policies EPCA & EPCAct Need for Building Energy Evaluation

Importance of energy evaluation

Terminology & metrics

Approach to new & existing buildings Weather & Climate Characteristics

Terminology

Earth: orbit, rotation, sun's radiation

Climate zone characteristics Building Energy Analysis (BEA)

Introduction to Building Energy Analysis

BEA as a tool for decision-making

BEA as a process-oriented approach and tools

**TOTAL SESSIONS : 75**

**Intent**

Design Studio II will lay emphasis on the design projects where Landscape Design and services will play a vital role ,where they learn to explore, investigate and apply various parameter of sustainability for design development of projected building/ urban scenarios.

It is also the culmination and application of knowledge gained about the principles and fundamentals studied throughout the second semester theory and theory cum studio courses.

**Content**

Design Projects where students detail out on simple functional areas of smaller scale such as children's play area in an township, club house and swimming pool deck area of gated community, small plaza and similar urban situations where in-depth Site Analysis and Site Planning knowledge is required.

**Objective:**

Objective of Studio work deals with understanding and / or resolving of basic landscape design issues and elements through study of existing landscapes.

**Studio Brief**

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

**TOTAL SESSIONS : 180****References**

Jack E. Ingels, Landscaping – Principles & Practices , Pelmer Publishers Inc., 1992

Grant W Reid, Landscape Graphics, Watson – Guptill publication, New York, 1987.

David Sauter, Landscape Construction, Pelmer Thomson Learning, 2000.

Michael Little wood, Landscape Detailing Volume I -IV, Architectural Press, 1993



**SEM ESTER III**

**AR M 2101 ARCHITECTURAL READING III**

**3 0 3**

**OBJECTIVES**

- To expose the students to the various types of structural systems that are employed for tall buildings, ( Limited to basics for Architectural Expression)
- Knowledge of the various building service systems that are required by tall buildings.

**Introduction to Tall Buildings**

**10**

Urban environment and physical planning considerations as an over view parameter, Architectural Design considerations such as space planning, planning of building services with emphasis on vertical transportation systems. Bye-laws and Codes as applicable.

**Tall Building Types & Floor Systems**

**10**

Classification of tall building structural system - Types - Shear frames, Interacting systems, Partial tubular systems, and Tubular systems. Composite Steel Floor systems, Pre stressed and post tensioned concrete floor systems - Examples.

**Lateral Load Resisting Systems**

**10**

Braced frames and moment resisting frame systems – Examples, Shear wall systems – Examples, Core and outrigger systems - Benefits and drawbacks – Examples, Tubular systems - Advantages and Disadvantages – Examples, Hybrid systems – Examples

**Services & Fire Protection For Tall Buildings**

**15**

Express elevators - Sky lobbies - Service floors etc., - Water supply systems - Skip stage pumping - Energy conservation methods - Location and sizing of water tanks. Wet risers, Sumps, Smoke detectors, Alarms, Sprinkler systems, Fire escape stairs, Fire resistant doors, Fire resistant rating of materials and Fire fighting equipments etc.,

**TOTAL SESSIONS : 45**

**References**

WOLFGANG SCHUELLER " High - rise building Structures", John Wiley and Sons, New York 1976.  
Bryan Stafford Smith and Alex Coull, " Tall Building Structures ", Analysis and Design, John Wiley and Sons, Inc., 1991.

COULL, A. and SMITH, STAFFORD, B. "Tall Buildings ", Pergamon Press, London, 1997.  
LinT.Y. and Burry D.Stotes, " Structural Concepts and Systems for Architects and Engineers ", John Wiley, 1994.

Lynn S.Beedle, Advances in Tall Buildings, CBS Publishers and Distributors, Delhi, 1996.  
Taranath.B.S., Structural Analysis and Design of Tall Buildings, Mc Graw Hill,1998.

**AR M 2102 PROJECT ASSESSMENT AND MANAGEMENT****3 0 3**

This course aims to provide an advanced understanding of project assessment and building project management.

**Project Management Framework****8**

Fundamentals of project management, different forms, project management process, life cycle, Management of Infrastructure projects

**Project Planning, Organizing and Networking****12**

Project plan development, programming, scheduling, scope of work definition, services co-ordination, Methods of scheduling, advanced scheduling techniques, Networking.

**Project control****12**

Cost estimate and control process, cost accounting system, communication planning, performance reporting, Quality, site safety and management, Design management, Laws & Legal aspects in construction projects, Risk management

**Applied optimization techniques for Architects****8**

Linear programming, various methods, duality, transportation & assignment, Inventory & replacement models.

**Marketing & Financing****5**

Marketing in Construction : HR, communications management,; Financing

MSProject / Primavera softwares

**TOTAL SESSIONS : 45****References**

Chitkara, K.K. "Construction Project Management planning", Scheduling and Control, Tata McGraw Hill Publishing Co., New Delhi, 1998.

Calin M.Popescu, Chotchai Charoenngam, "Project Planning, Scheduling and Control in Construction: An Encyclopedia of Terms and Applications", Wiley, New York, 1995

Chris Hendrickson and Tung Au, "Project Management for Construction – Fundamentals concepts for Owners", Engineers, Architects and Builders, Prentice Hall, Pittsburgh, 2000

Willis., E.M., " Scheduling construction projects", John Wiley and Sons 1986

Halpin, D.W., “Financial and cost concepts for construction Management” , John Wiley and Sons, New York, 1985

P.K.Joy “Total Project Management – The Indian Context” Macmillan India Limited 1998

This course aims to understand the role of research in architecture, about scientific writing and it also increase the students' abilities to interpret, evaluate and conduct a research.

**Introduction to Research & research design****12**

Elements of good research, types of research, research methods: qualitative, quantitative and mixed measures

Research design as a part of the designer's thinking: problem statement, literature review, critical thinking, types of hypothesis, types of sample, methods of data collection, data analysis, research proposal preparation

Information searching techniques: field study to archives and libraries.

Statistical theories: regression analysis, factor analysis and multivariate analysis

**Methods in research****12**

Qualitative research: types of research survey, interviews in research, observation, physical traces

Correlational research

Experimental and quasi experimental research

Simulation and modelling research

Case studies and combined strategies

**Methods & tools of research****12**

Environmental measurement: landscape evaluation paradigms, visual representation and cues, recognition of building types, photo interviewing, attributes of residential environment

Image-ability: environmental character, visual appraisal, Environmental mapping: cognitive mapping, direct observation, documentary techniques, photographically studying behaviour

**Report Writing and Presentation****9**

Research paper/report preparation: Components, Methods to use information: issues of copy right, citation & referencing: Harvard and Chicago styles. End Note. Presentation techniques: oral presentation, layout, printing process, internet, overhead, power point.

**TOTAL SESSIONS : 45****References**

- Best and Kahn, Research in Education: Prentice Hall of India Ltd.2006
- Gopal M.H. An introduction to research procedures in social sciences, Bombay: Asia Publishing house, 1970
- Kothari C.R. Research methodology – methods and techniques. New Delhi, Viswaprakashan, 1990
- Young, Pauline V, Scientific social surveys and research, New Delhi: Prentice Hall of India Ltd.1984

**Intent**

Design Studio III is a design studio course with its main focus on Planning of a high raised structures which is the need of the day in most of our urban areas be it of single functional use such as Residential, Commercial, Hospital, Hospitality, Entertainment or Educational etc.

**CONTENT**

This is a design studio course with its main focus on Planning of a high raised structures which is the need of the day in most of our urban areas be it of single functional use such as Residential, Commercial, Hospital, Hospitality, Entertainment or Educational etc. where the complexity of Design parameters Vs the site constraints are likely to be of high importance in addition to stringent follow up of Building Bye-laws i.e. understanding of the program requirements and design of tall buildings by attempting one of the Topics listed as Design Projects The course encourages students to use the computer as a design tool.

**MULTI - USE STRUCTURES**

Students will be encouraged to investigate this type of buildings and explore design solutions that would lead to a smooth integration of various functions, while keeping in mind the cultural and local factors. Integration of intelligent building management systems that lead to energy efficiency, intelligent security and enhanced fire fighting services would be mandatory. Students will be encouraged to design building form and fabric in response to the cultural values and lifestyle that is in vogue in Indian cities.

Planning & Design Of High Rise Buildings (To Include Multi Speciality Hospitals, It Nodes / Knowledge Centres And Residential Projects Etc), Entertainment Centres

**TOTAL SESSIONS : 180****References**

- John Zukowsky- Skyscrapers , New millennium - Prestel, London.
- Harriet Scoenholz Bee-Tall Buildings,The museum of modern art-The museum of modern art ,New York – 2003 11
- JohasinEiselle& Elen Klofr –High rise manual – Typology design construction & Technology - Birkhanser,Basel -Switzerland– 2003
- Mathew Wells -Skyscrapers , Structure & Design - Lawrence King publishing London 2005.
- Judith Dupre-Skyscrapers ,History of the world’s most famous skyscrapers – Blackdog&Leventhal publishers ,New York 1996.
- Hamzah T.R& Ken Yeang- Ecology of the sky – Images publishing, Victoria 2001. 7. Riewoldt (Otto) –Intelligent spaces –Architecture for the information age- Lawrence King , London - 1997

**ELECTIVE I (BASIC ELECTIVES)**

**AR M 1211 LIGHTING AND VENTILATION**

**3 0 3**

**Photometry and Lighting Techniques**

**12**

Human visual perception, photometric laws and rules, daylight as a light source, day lighting design, monitoring and evaluation. Terminology involved with photometry and lighting technique, basic photometric laws, visual factors for workplace lighting, daylight as a source of light, daylight data and calculations in accordance with building regulations, the significance of daylight for health and well-being, overview of electric sources of light and their qualities.

**Building Illumination**

**8**

Production, measurement and control of light, design of lighting systems. Design in respect to day lighting. Integration of lighting systems with mechanical systems.

**Day light And Ventilation**

**10**

Day lit Availability Study, Daylight Simulations & Metrics, Electric Lighting + Controls, Natural Ventilation Physical Principles; Manual Methods, Natural Ventilation - Simulation Approaches, Individual Course Project and Discussions.

**Lighting Design**

**6**

Different entities of illuminating systems Light sources: daylight, incandescent, electric discharge, fluorescent, arc lamp and Lasers Luminaries, wiring, switching & control circuits Laws of illumination; illumination from point, line and surface sources Photometry and spectrophotometry.

**Interior and Exterior Lighting**

**9**

Interior lighting – Industrial, residential, office departmental stores, indoor stadium, theatre and hospitals. Exterior lighting- flood, street, aviation and transport lighting, lighting for displays and signalling- neon signs, LED-LCD displays beacons and lighting for surveillance, Utility services for large building/office complex & layout of different meters and protection units  
IS 6665 Code of Practice for Industrial Lighting ,IS 1944 Code of Practice for Lighting of public thoroughfares, IEC 60598-2-3 Particular requirements – Luminaires for road and street lighting

**TOTAL SESSIONS : 45**

**References**

Gillette, Michael. *Designing with Light*, 3rd Edition. Palo Alto, California: Mayfield Publishing Co., 1997.

**AR M 1212 New Age Materials & Techniques****3 0 3**

This course aims to give an insight to emerging construction materials and technology and their applications in the construction field.

**Green Building Materials and Technology****20**

Introduction, green building product and materials, product selection criteria. Concrete, Eco block, Insulated concrete forms (ISF), hydra form, prefabs / Structural Insulating panels, Cellulose Insulation, adobe, rammed earth, earth sheltered and recycled materials. Working Details and / Case Studies. Rating systems as National and International level.

**Bio Materials****10**

Properties, Application, Specification and Standards ( Indian and International) Bio materials from Industrial Waste, Mining Waste, Mineral waste, Agricultural Waste. Working Details and Case Studies.

**New Emerging Materials****15**

Properties, Application specification and Standards (Indian and International) Teflon, Special Glasses, Aluminum composite Panel, cables and plastics , Polymers, Aerogels, etc., Nano Technology Applications in construction. Working Details and Case Studies.

**TOTAL SESSIONS : 45****References**

William P.Spence, Construction Materials, Methods and Techniques

Charles J. Kibert, Sustainable construction: Green Building Design and Delivery

Ross Spiegel, Dru Meadows, Green Building Materials : A Guide to Product Selection and Specification

Louise Jones, environmentally Responsible Design: Green and Sustainable Design for Interior Designers

Sylvia Leydecker, Nano Materials: In Architecture, Interior Architecture and Design.

National Rating systems for Green Buildings, Ministry of New and Renewable Energy, Government of India.

Overview of International Green Building Rating Systems.

**ELECTIVE II (ADVANCED ELECTIVES)**

**AR M 2111      DISASTER RESILIENT DESIGN**

**3 0 3**

This course offers a wide knowledge on the various kinds of disasters and risks at the global and national level. It also provides an insight in to the Institutional framework pertaining to the disaster management, preparedness and mitigation.

**Concept and Theories**

**12**

Definitions – Types of disasters – causes & impacts – concept of Risk – Levels of disasters – Hazards & vulnerability – Disaster phenomena and events (Global, National & Regional) – factors causing disasters - Climate change, Coastal erosion, Global sea rise, Landslides, Environmental degradation, Cyclone effects on Coastal towns, Earth tremors

**Disaster Management**

**8**

Concept of risk & crisis management – Disaster Management Cycle – Pre-disaster, Response & Post-Disaster

**Technologies for Disaster Management**

**10**

Role of IT in Disaster preparedness – Remote sensing – GIS & GPS – Use & applications of emerging technologies / ICST for emergency communications HAZARD ASSESSMENT & VULNERABILITY ANALYSIS: Risk analysis techniques – vulnerability identification – socio-economic factors of vulnerability – resource analysis & mobilisation

**Design Planning & Solutions**

**15**

Design guidelines for disaster proof conditions – Norms & standards – Engineering, architectural, landscape & planning solutions for different types of calamities.

**TOTAL SESSIONS : 45**

**References**

- Singh, RB (2000), Disaster Management, Rawat Publication, Jaipur.
- Carter, WN (1990) Disaster Management a disaster manager's handbook, Asian Development Bank, Manila
- Lagorio, HJ (1990) Earthquakes: architect's guide to non structural & seismic hazards, John Wiley & Sons



**AR M 2112 URBAN DESIGN****3 0 3**

This course offers a general review of concepts and principles of urban design which is required to develop an understanding about broad based aspects & issues required for conception & design of 3d built environment & public space at the urban level.

**Understanding urban design objectives & scope****10**

Origin & evolution of cities & urbanism – Historical review, Introduction to urban design, relationship between urban design, architecture and urban planning; objectives and scope of urban design

**Urban fabric reading****10**

Elements of urban design, urban morphology, urban form, urban mass, urban space. Some basic urban design principles and techniques, ways of interpreting, Phenomenology, Tools of mapping

**Sustainable development****8**

Sustainable cities program, Revitalization, Transit Metropolis

**Restructuring the City****8**

Contemporary processes, Place making, Reconfiguring urbanization

**Application of digital media in Urban Design****9**

GIS, 3D modeling & Diagramming

**TOTAL SESSIONS : 45****References:**

- Handbook of Energy Conscious Buildings By JK Nayak & JA Prajapati
- Sustainable Building Design Manual Volume 2
- The Basics of Sustainable Design
- Szokolay, S, S V 2004, Introduction to architectural sciences: The basis of Sustainable Design, Architectural Press, Oxford.
- TERI 2004. Sustainable Building Design Manual Volume 2
- The elements of Architecture- Principles of Environmental Performance in Buildings, Earthscan ISBN 9781844077175
- The Power of Sustainable Thinking, Earthscan