

**AR1801 ARCHITECTURAL DESIGN – VII**  
Teaching Scheme: 0(L) - 0(T) -11(P)

Credits: 7

**Course Objective**

To introduce the students the analysis, planning, design with the understanding of a wide range of related issues in urban or rural context.

**Major Project:** Projects involving Architectural Design solutions in Urban Areas. Development/redevelopment of markets, plazas, city square; transport and public areas, etc.

**Short project-** Design of related areas of Major project

**Course Outcome**

*At the end of the course, the students shall have acquired knowledge of the process and understanding of issues related to urban and rural context.*

**References**

1. IS Codes
2. BIS, National Building Code 2005, New Delhi, 2005
3. Kerala Municipal Building Rules
4. D. Chiara & Callender, 'Time saver standards for building types'; McGraw-Hill Inc., US; 1990
5. Paul D Spreiregen "Urban Design, the Architecture of Towns and Cities", McGraw Hill., 1965
6. Gordon Cullen, "Concise Townscape". Reprint Edition Routledge 1995
7. Edmund N. Bacon, 'Design of Cities'; Thames & Hudson Ltd, 1978

## AR1802 PROFESSIONAL PRACTICE

Teaching Scheme: 4(L) - 0(T) - 0(P)

Credits: 3

### Course Objective

To provide theoretical knowledge base on the uniqueness of Indian traditional Architectural principles, the meaning of space, the manifestation of energy, the selection of site and how integration of built form with site happens at meta physical level based on articulation of celestial grid.

#### Module I

Architects Act 1972 – Council of Architecture – Functions and powers of Council of Architecture – Architects(Professional conduct) Regulations –Standard terms for Comprehensive architectural services, landscape and for urban design works – Guidelines for architectural competition, rules and regulations of copyrights. Indian Institute of Architects – Function of Indian Institute of Architects – Election of members and students, privilege to members. Scope of works and schedule of services and Scale of Professional charges as per Council of Architecture guidelines- Guidelines for architectural competition, rules and regulations of copyrights. Code of professional conduct laid by Council of Architecture.

#### Module II

Tenders – Inviting, opening and acceptance of Tenders – Tender notice – Work order letter –Tender document – Special notice and Tender acceptance letter – Public, private and negotiated tenders – Types of tenders–Day work – Piece work – Daily labour – Earnest money deposit – security deposit –Retention amount.

Contract – Definition and general principles – Types of contract –Discharge of contract –Contract document – Schedule of quantities – Contract drawings – Contract Sum – Contract bills – Architects instructions.

#### Module III

Duties and liabilities of contractor – architect and employer under the contract – Clerk of works – Engineer in charge – Resident engineer – Nominated sub-contractor – consultants – liquidated damages – Variation and extras prime cost and provisional sum – Determination of contract. – Certificates of Payments.

Arbitration – Advantages of arbitration – Appointment of Arbitrators and Umpire – Powers and duties of arbitrators – role of umpire – Arbitration agreement – Conduct of arbitration proceedings – Publications of the award - Filing of award – Kinds of arbitration –Arbitration and building contract.

#### Module IV

Management – Principles of management – Practice of management – Levels of management – Scientific management – Personal Management – Role of Management – Leadership, Motivation and co-ordination. Office management – System approach for pre-construction stage – Drawing sizes and sheet title – Forwarding letters – Payment bills - Registers for dispatch and documents – Work output charts Stampings – Preparation of minutes – Accounting – Double entry, single entry and book keeping - Tax planning for architects.

Supervision – Quality control, daily report system, visual recording, site records

Profession – Options on centering the profession – short comings while running own office –Duties and responsibilities of the principal architect – Secure clientage – Disciplines environment of the office.

### References

1. Roshan H. Namavathy- 'Professional Practice With Elements of Estimating Valuation Contract and Arbitration'; Lakhani Book Depot, Mumbai,
2. Roshan H. Namavathy- 'Theory and Practice of Valuation' Lakhani Book Depot, Mumbai,
3. Ashok Nain - 'Professional Valuation Practice'; Tata Mc Graw Hill 1997
4. V N Vazirani , S.P. Chandola- 'Construction Management & Accounts'; Khanna Publishers, Delhi, 2011
5. Hand book of Professional Documents 2013; Council of Architecture, New Delhi 2013
6. Architects Reference Manual – Workshops professional practice for Architects by IIA Kerala Chapter and Trivandrum Centre, November 1996.

### University Examination Pattern

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

## AR1803 DISASTER PREPAREDNESS AND MANAGEMENT

Teaching Scheme: 3(L) - 0(T) - 0(P)

Credits: 3

### Course objective:

- To become familiar with definitions and terms used within the disciplines of disaster preparedness and emergency management.
- To understand planning, mitigation, in-crisis decision making, evacuation, response, and recovery within the leadership during an event

### Module I

Hazard, Disaster, Risk, Vulnerability. Disaster – an over view; Disaster – the Indian Perspective; Types of disasters and its understanding.

### Module II

Natural hazards and Disasters -Earthquake, cyclone, floods, droughts, landslides, lightning. –Causes, hazardous effects, mitigation measures. Man induced hazards & disasters:- soil erosion-causes, conservation measures; nuclear explosion-environmental problems, corrective measures; fire mitigation measures; terrorism.

### Module III

Preparedness and mitigation - Preparing hazard zonation maps, Predictability/ forecasting & warning, Community preparedness, retrofitting, Population reduction in vulnerable areas, Awareness, Capacity building.

### Module IV

Disaster Management; Community health and casualty management; Disaster Management -role of various agencies; Relief measures; Post disaster- Recovery, Reconstruction and Rehabilitation. Remote- sensing and GIS applications in real time disaster monitoring.

### References

1. Goel.S.L, 'Encyclopedia of Disaster Management'; Deep & Deep Publications, 2006
2. Government of India, (2004), 'Disaster Management in India' – A Status Report, Ministry of Home Affairs (Disaster Management Division), New Delhi. 2004
3. Zebrowski, Ernest Jr, (1997)-, 'Perils of a Results Planet: Scientific Perspectives on Natural Disasters', Cambridge University Press, Cambridge.
4. Guha-Sapir D., Hargitt, D and Hoyois P. (2004), 'Thirty Years of Natural Disasters: 1974-2003, The Numbers'; UCL Presses, De Louvain.
5. Ministry of Home Affairs (MHA), (2004)-, 'National Programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM)', National Disaster Management Division (Government of India), New Delhi.
6. Hewitt, K (1983), 'Interpretation of a Calamity', HarperCollins Publishers Ltd .
7. Erik Auf Der Heide (1989)-, 'Disaster Response: Principles of Preparation and Coordination'; C.V.Mosby, Baltimore.
8. Amarnath Chakrabarti, Devdas Menon, Amlan K. Sengupta, 'Handbook on Seismic retrofit of buildings'; Narosa Pub House,2008

### Course outcome:

- Upon completion of the course the students shall be able to effectively define and describe the terminology used within disaster planning and emergency management.
- They should be able to formulate an emergency response plan, manage an incident, follow-up and analyze it.

### University Examination Pattern

Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.

Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks

## AR1804 CONSTRUCTION MANAGEMENT

Teaching Scheme: 3(L) - 1(T) - 0(P)

Credits: 3

### Course objective:

- To study and understand the concept of planning, scheduling, and the techniques necessary for construction project.

#### Module I

Introduction to construction economics and finance – Time value of money, Cash flow, Depreciation, Cost benefit analysis. Introduction to project management – Objective of construction management, Types of construction projects, Project Planning, scheduling, monitoring & control.

#### Module II

Introduction to Construction Scheduling techniques- Bar chart, Gantt chart, Work break down structure, Network representation, Network analysis, Principles and application of CPM, Network crashing.

#### Module III

Resource scheduling- resource allocation and resource leveling, other scheduling Methods– PERT and Linear Scheduling Method (LSM)

Project control- Earned value, Cost and Schedule Performance

#### Module IV

Project monitoring, Claims, Delay Analysis, Expediting the project, Duration cost trade off, Optimization. Introduction to Project management software packages.

### References

- Callaghan, M.T, Quackenbush, D.G. and Rowings-, J.E, 'Construction Project Scheduling', McGraw-Hill (1992)
- Robert B. Harris-, 'Precedence and Arrow Network Techniques for Construction'; John Wiley & Sons, 1978
- Stevens James D, 'Techniques of Construction Network Scheduling'; McGraw-Hill Inc, 1989
- Bhattacharjee S.K-, 'Fundamentals of PERT/CPM and Project Management'; Khanna Publishers, 2004
- N. P. Vohra- 'Quantitative Techniques in Management'; McGraw Hill Edu. India, 2009

### Course outcome:

Upon completion of study the students shall be able to effectively manage a construction project.

### University Examination Pattern

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

**Elective III**

**AR1805**

Teaching Scheme: 3(L) - 0(T) - 0(P)

Credits: 3

**AR1805-a: ENERGY EFFICIENT ARCHITECTURE**

Teaching Scheme: 3(L) - 0(T) - 0(P)

Credits:3

Course Objective:

*To introduce the students the recent techniques and concepts in energy efficient architecture through Smart buildings and Biophilic design.*

**Module I**

Introduction to energy efficiency in architecture. Solar passive techniques in building design. Energy efficient lighting and HVAC system. Renewable energy systems-photovoltaic systems, solar water heating etc. Low energy materials methods of construction. Reduction of transportation energy. Design influencing thermal comfort conditions and reduction of energy construction.

**Module II**

Introduction of smart buildings: Brief history of concept of smart /intelligent buildings, Aims of Smart buildings. Smart buildings and energy efficiency. ICT in smart buildings. The driving factors of smart buildings: Positive financial effects, energy conservation, greater system functionality, increasing needs, continuing evolution of technology.

**Module III**

Smart building systems: HVAC control, Lighting control, Audiovisual, Video distribution, Access control, Data network, voice network, power management, Video surveillance, and fire alarms. Difference between ordinary buildings and intelligent/smart buildings. Usefulness of smart buildings especially for the aged.

**Module IV**

Introduction to Biophilic Design. Biophilia and Biophilic design. Principles and benefits of biophilic design. Energy effectiveness of biophilic architecture. Biophilic buildings connect people with nature- Patterns of biophilic design.

**References**

1. G. Iannaccone, M Imperadori, G.Masera; Smart eco-buildings towards 2020/30-Innovative technologies for Resource efficient Buildings; Springer; 2014
2. K. J. Habermann, R. Gonzalo: Energy Efficient architecture-Basics for Planning and Construction; Birkhauser Verlag AG 2006

**University Examination Pattern**

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

## AR1805 b: ADVANCED STRUCTURAL SYSTEMS

### Course objective:

- To study and understand the incorporation of different structural elements and materials to enhance the aesthetic value and stability of buildings.

#### Module I

Structures in Architecture, Loads on structures – Different types – load characteristics – use of occupancy loads – Earth and hydraulic loads, Dynamic loads, wind and earthquake loads etc. Structural requirements – basic requirements like strength, equilibrium, stability, functionality, economy and aesthetics.

#### Module II

Structural Materials – Review of traditional materials – properties and uses of modern materials like steel, Aluminum, reinforced concrete, pre-stressed concrete, plywood (different types), structural plastics, glasses, composites such as ferro-cement, fibre reinforced concrete.

#### Module III

Structural elements – behaviour of structural elements subjected to tension, compression, flexure and torsion; structural behavior of trusses, frames, plates, shells, arches, cables and grid construction. Structural systems, different types – behaviour of different structural systems under loads.

#### Module IV

Different structural systems for high rise concrete buildings-frame, shear wall, frame-shear wall, framed tube, tube in tube and modular tube; For high rise steel buildings- Rigid Frame, Framed Shear truss, Belt truss, Framed Tube, Truss Tube with interior Column, Bundled tube, Truss tube without interior columns. Reinforcement detailing of structural elements like beams, columns, slabs, footings, continuous beams, frames, staircases and shear walls. Structural safety, quality control aspects of structural elements and structural systems.

### References :

1. Salvadori & Heller- 'Structures in Architecture: The building of buildings' ; Pearson, 2016
2. Salvadori & Levy- 'Structural design in Architecture'; Prentice Hall College 1981
3. William Zuk, 'Concepts of structures'; Reinhold, 1963.
4. H. J. Cowan 'Architectural Structures: Introduction to Structural Mechanics'; Pitman Pub, 1980
5. Heinrich Engel 'Structure Systems'; Van Nostrand Reinhold Company, 1981
6. Robert A. Coleman 'Structural Systems Design', Prentice Hall; 1983
7. Tung-Yen Lin, Sidney D. Stotesbury, 'Structural Concepts and Systems for Architects and Engineers'; John Wiley & Sons Inc, 1988
8. BIS, I S Code 456 , 2000

### Course outcome:

Upon completion of study the students shall be familiar within different structural techniques and systems available in the industry.

### University Examination Pattern

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

## AR1805c: SERVICES IN HIGH RISE BUILDINGS

### Course objective:

- To learn how to incorporate different services in a high rise building.

#### Module -I

Standards of services in High Rise Buildings – Integration of Services – Relative costs – Ergonomic aspects of Service Design – Concepts of Intelligent Architecture and Building Automation.

#### Module II

Water Supply, Drainage and Fire safety-

Water Supply and waste water collection systems – Water storage and distribution systems –Planning and Design –Selection of pumps – Rain water harvesting – Sewage treatment- Recycling of water.

Passive Fire Safety - Fire Detection and Fire alarm systems – Planning and Design.

#### Module -III

Ventilation and Air-Conditioning

Natural and Mechanical Ventilation Systems – Air-conditioning systems and load estimation – Planning and Design –Automation and energy Management.

#### Module -IV

Electrical , Mechanical Security and Surveillance systems

Natural lighting systems – Energy efficiency in lighting systems – Load and Distribution – Planning and Design –Automation – Planning and Design of elevator systems and services – Elevator lobby area– Escalators, moving walls and ramps – safety aspects. Security system – Access control and Perimeter Protection – CCTV intruder Alarm Safety and Security.

### References

1. Manual on Water Supply and Treatment (1991) third Edition, Central Public Health and Environmental Engineering Organization, Ministry of Urban Development, New Delhi.
2. 'National Building Code of India' Sep 1983 – Bureau of Indian Standards, 1984.
3. W.G. McGuinness and B.Stein, 'Mechanical and Electrical equipment for buildings, John Wiley and sons Inc., N.Y.
4. Riley Shuttleworth, 'Mechanical and electrical Systems for Construction', McGraw Hill Book Co., U.S.A., 1983.
5. ASHRAE: Handbook–HVAC Systems and Equipment(1992), HVAC Applications (1991) ASHRAE, Inc. Atlanta.
6. Langdon – Thomas G.J., - 'Fire Safety in Buildings, Principles and Practice' – Adam and CharlesBlade, London, 1972.

### Course outcome:

Upon completion of study the students shall be able to incorporate different services in a high rise building.

### University Examination Pattern

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

## Elective IV

Teaching Scheme: 3(L) - 1(T) - 0(P)

Credits: 3

### AR1806a: ARCHITECTURAL CONSERVATION

#### Course objective:

- To learn how to incorporate different services in a high rise building.

#### Module I

##### Introduction to Conservation

Definition, Need, Objectives and Scope of Architectural Conservation.

Beginning of the Conservation movement - Contributions of John Ruskin & William Morris. Definitions:

Cultural heritage, Natural heritage, Built heritage - Ancient Monument.

Agencies involved in conservation - ICCROM, ICOMOS, ASI, State departments of Archaeology, Town Planning departments, State Art and Heritage Commission & INTACH.

Venice charter (1964), Burra charter (1979).

Ethics of Conservation practice.

Authenticity & Integrity in Conservation practice.

#### Module II

##### Traditional Building Construction

Historic building materials and construction techniques with special reference to Kerala.

- Lime Mortar, Laterite wall, Wooden wall and Roof in Kerala's traditional Architecture.

**Defects in construction techniques / structure** :- foundation, wall, wooden roof, Spanning elements -arches, vaults, domes.

#### Module III

**Causes of decay in materials and structure** - Climatic causes – Thermal movements, rain, frost, snow, moisture, wind. - Botanical, biological and micro biological causes – Animals, birds, insects, fungi, moulds, lichens

- Natural disasters – Fire, earthquakes, flood, lightning

- Manmade causes – Wars, pollution, vibration, vandalism and neglect

#### Module IV

##### Technique of Conservation

Preparatory procedures for conservation

- Identification of the 'values' in the object, monument or site:- 'emotional', 'cultural' and 'use' values.

- Inventories, Initial inspections

- Documentation - Research, Analysis and recording (Reports)

##### Seven Degrees of intervention

- Prevention of deterioration, Preservation, Consolidation, Restoration, Rehabilitation, Reproduction, Reconstruction.

#### References

- Bernard M. Fielden- 'Conservation of Historic Buildings' –, Architectural Press, 2003
- Ashurst, J. and Dimes, F.G. Conservation of Building and Decorative Stone, Butterworth-Heinemann, London. -1990.
- Jukka Jokilehto, Butterworth - Heinemann – 'A History of Architectural Conservation' -, 1999
- ICOMOS, Earthen Architecture: The conservation of brick and earth structures. A handbook. (1993)
- Poul Beckmann and Robert Bowles – 'Structural Aspects of Building Conservation', Elsevier Butterworth-Heinemann, 2012

#### University Examination Pattern

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*



## **AR1806 b: ENVIRONMENTAL IMPACT ASSESSMENT**

### **COURSE OBJECTIVES:**

- To understand the basic principles of Environmental Impact Assessment
- To develop knowledge in various processes involved in EIA with case studies.

#### **Module I**

Introduction: Understanding of EIA and approval processes of architectural projects, Concepts of environmental impact analysis, key features of National environmental policy act, Environmental protection acts, EIA methodologies – Screening and scoping - matrix and network methodologies for impact identification, description of the affected environment – environmental indices. Rapid EIA and Comprehensive EIA

#### **Module II**

Prediction and Assessment of Impact on Air and Water Environment: Basic information on air quality, sources and effects of air pollutants, key legislations and regulations, impact prediction approaches, assessment of significance of impacts, identification and incorporation of mitigation measures Assessment of impact on water quality (surface and ground water), Vegetation and wildlife.

#### **Module III**

Prediction & Assessment of Impact on Noise & Social Environment: Basic information on noise, key legislation and guidelines, impact prediction methods, assessment of significance of impacts, identification and incorporation of mitigation measures, Environmental Risk Analysis, Definition of Risk, Consequence Analysis.

#### **Module IV**

Decision Methods for Evaluation of Alternative: Development of decision matrix. Public participation in environmental decision making, techniques for conflict management and dispute resolution, verbal communication in EIA studies.

#### **Course Outcome:**

Upon completion of this course, students will:

1. Identify the environmental attributes to be considered for the EIA study
2. Formulate objectives of the EIA studies
3. Identify the methodology to prepare rapid EIA
4. Prepare EIA reports and environmental management plans

#### **References:**

1. C.J.Barrow , Environmental management for sustainable development, Routledge Pub., 2006
2. Edesio Fernandes Environmental strategies for sustainable development in urban area (lessons from Africa and Latin America), Athenaeum Press Ltd., 2000
3. James K. Lein, Integrated environmental planning, T.J. International Publication, 1998
4. R.Kerry Turner , Sustainable environment management, S.K.Jain Publisers, 1998
5. R.E. Hester , Risk assessment and risk management, Royal Society of Chemistry Pub., 2000
6. Anand, Rajesh; Jana, N.C.; Sudhir Singh, Disaster management and sustainable development, Pentagon Press, 2009
7. Building Material and Technology Promotion Council, Report of the expert group on natural disaster prevention, preparedness and mitigation having bearing on housing and related infrastructure, Part 3 : Guidelines for improving Hazard resistant construction of buildings and landuse zoning, New Delhi, BMTPC, 1998
8. Carter, W. Nick, Disaster management : A disaster managers handbook, Manila, ADB, 1991
9. HUDCO, Urban environmental management the Indian experience, Hudco 1996

#### **University Examination Pattern**

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

## AR1806 c: BUILDING INFORMATION SYSTEM

### OBJECTIVES

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

### MODULE I

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

### MODULE II

Objective of a Fire Alarm System, essential components of a Fire Alarm System, Basic knowledge on how a Fire Alarm system works, designed and installed.  
Objective of a Fire Suppression System, Explanation on Fire triangle, Essential Components of a Fire Suppression System, different type of Fire Suppression Systems, detailed design criteria for Hand held extinguishers Wet Riser, Sprinkler Systems and various gas Based Fire Suppression System,

### MODULE III

Objective of a Public Address System, essential components of a Public Address System, various types of technologies currently in use and design guidelines to be followed and basic knowledge on how a Public Address System works, is designed and installed.  
Introduction to Access Control, Intruder Alarm, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed.

### MODULE IV

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

### COURSE OUTCOME:

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

### REFERENCES:

1. Maurice Eyke, 'Building Automation Systems – A Practical Guide to Selection and Implementation'; Oxford, BSP Professional, 1988.
2. Mike Constant & Peter Turnbull, 'The Principles and Practice of Closed Circuit Television'; Paramount Publishing, 1994
3. Rules for Automatic sprinkler Installation – second edition – Pub: Tariff Advisory Committee.
4. CCTV Surveillance, Herman Kruegle, Butterworth-Heinemann, 2006
5. BIS, National Building Code of India 2005 (Part IV); New Delhi, 2005
6. Bureau of Indian Standards IS2189, IS2190, IS15105, IS13039.
7. Fire Suppression Detection System, John L. Bryan; Macmillan 1993
8. Security Systems and Intruder Alarm System, Vivian Capel; Newnes 1999

### University Examination Pattern

*Part A (40 marks) - Eight Short answer questions of 5 marks each. All questions are compulsory. There should be two questions from each module.*

*Part B (60 Marks) – Two Questions from each module. Candidates have to answer any one full question out of the two from each module. Each question carries 15 marks*

**AR1807 DISSERTATION**  
Teaching Scheme: 0(L) - 2(T) - 0(P)

Credits: 2

**AR 1901 Practical Training**

Credits: 10

**AR 11001 Architectural thesis and Viva Voce**  
Teaching Scheme: 0(L) - 0(T) - 30(P)

Credits: 16