Appendix "AG" Item No.55

Bachelor of Architecture (B.Arch.,)

Under Choice Based Credit System

Scheme of Instruction, Examination and Syllabi for 4th and 5th Years Course to be implemented w.e.f. academic year 2015-2016

Choice Based Credit System Pattern
w.e.f. Admitted Batches 2015-2016

1/5 B.Arch 1st Semester

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Lab Total Internal External Total of exam (periods/ (periods/ hrs. (periods/
 week) week) week)

AR111 Basic Design & 8 2 6 - 8 50 50 100 5 Hrs. Visual Arts

AR112 Architectural Drawing & 5 2 3 - 5 50 50 100 5 Hrs. Graphics-1

AR113 Building Materials & 6 2 4 - 6 50 50 100 5 Hrs. Building Constructins-1

AR114 Introduction to 3 3 0 - 3 30 70 100 3Hrs. Architecture, Art&Culture

AR115 Structural Mechanics-1 4 4 0 - 4 30 70 100 3Hrs.

AR116 English 3 3 0 - 3 30 70 100 3Hrs.

AR117 Survey & Site Studies 3 2 0 3 5 50 50 100 Practical

AR118 Sports/NSS/NCC 2 3 0 - 3 - - -

 Total 34 21 13 3 37 290 410 700

1/5 B. Arch 2nd Semester

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Lab Total Internal External Total of exam (periods/ (periods/ hrs. (periods/
 week) week) week)

AR121 Architectural Design-I 8 2 6 - 8 50 50 100 5 Hrs

AR122 Architectural Drawing & 5 2 3 - 5 50 50 100 5 Hrs Graphics-II

AR123 Building Materials & 6 2 4 - 6 50 50 100 5 Hrs Building Construction-II

AR124 History of Architecture –I 3 3 0 - 3 30 70 100 3 Hrs.

AR125 Structural Mechanics-II 4 4 0 - 4 30 70 100 3 Hrs.

AR126 English Lab 2 3 0 - 3 50 50 100 3 Hrs.

AR127 Workshop Practice 3 2 0 3 5 50 50 100 Practical

AR128 Sports/NCC/NSS 2 3 0 - 3 - - - -

 Total 33 21 13 3 37 310 390 700

2/5 B.ARCH 1ST SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR211 Architecture Design-II 8 2 6 8 50 50 100 10 Hrs.

AR212 Building Materials & 5 2 3 5 50 50 100 5 Hrs.
 Building Construction-III

AR213 Structural Mechanics-III 4 4 0 4 30 70 100 3Hrs.

AR214 History of Architecture-II 4 4 0 4 30 70 100 3Hrs.

AR215 Building Services-I 4 4 0 4 30 70 100 3Hrs. (Water supply & Sanitary
 Engineering)

AR216 Climatology-I 4 3 1 4 30 70 100 3Hrs.

AR217 Seminar-I 2 2 1 3 50 50 100 Viva-Voce

 Total 31 21 11 32 270 430 700

2/5 B.ARCH 2nd SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR221 Architectural Design-III 8 2 6 8 50 50 100 10 Hrs

AR222 Building Materials & 5 2 3 5 50 50 100 5 Hrs Building Construction-IV

AR223 Design of Structures-I 4 4 0 4 30 70 100 3 Hrs.

AR224 History of Architecture-III 4 4 0 4 30 70 100 3 Hrs

AR225 Building Services-II 3 3 0 3 30 70 100 3 Hrs. (Building Acoustics)

AR226 Climatology-II 4 3 1 4 30 70 100 3 Hrs.

AR227 Environmental Studies 2 4 0 4 30 70 100 3 Hrs.

 Total 30 22 10 32 250 450 700

3/5 B.ARCH 1ST SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR311 Architecture Design-IV 8 2 6 8 50 50 100 Viva-Voce

AR312 Building Materials & 5 2 3 5 50 50 100 5 Hrs. Building Construction-V

AR313 Design of Structures- II 4 4 0 4 30 70 100 3Hrs.

AR314 Human Settlements & 3 3 0 3 30 70 100 3Hrs. Town Planning

AR315 Building Services-III 3 3 0 3 30 70 100 3 Hrs. (Electrical and HVAC
 Services)

AR316 Landscape Design & 4 3 1 4 30 70 100 3 Hrs. Site Planning

AR317 Computer Applications 4 2 2 4 50 50 100 Practical

 Total 31 19 12 31 270 430 700

3/5 B.ARCH 2nd SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR321 Architectural Design-V 8 2 6 8 50 50 100 Viva-Voce

AR322 Building Materials & 5 2 3 5 50 50 100 5 Hrs Building Construction-VI

AR323 Design of Structures- III 4 4 0 4 30 70 100 3Hrs.

AR324 Working Drawings-I 6 2 4 6 50 50 100 Viva-Voce

AR325 Specification, Estimation 3 3 0 3 30 70 100 3 Hrs. & costing

AR326 Elective-I 4 4 0 4 30 70 100 3 Hrs.

 a) Interior Design

 b) Barrier free Architecture 30 70 100 3 Hrs.

 c) Architectural Journalism 50 50 Viva-voce

AR327 Soft Skills 1 3 0 3 100 - 100 -

 Total 31 20 13 33 340 360 700

4/5 B.ARCH 1ST SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR411 Architecture Design-VI 8 2 6 8 50 50 100 Viva-Voce

AR412 Building Services-IV 4 4 0 4 30 70 100 3 Hrs.

AR413 Working Drawings-II 6 2 4 6 50 50 100 Viva-Voce

AR414 Urban Design 4 4 0 4 30 70 100 3 Hrs.

AR415 Structures Design Project 4 4 0 4 50 50 100 Viva-Voce

AR416 Elective-II 4 4 0 4 30 70 100 3Hrs.

 a) Architectural Conservation

 b) Spatial Cognition-I

 c) Advanced Construction

AR417 MOOCS-1 0 0 0 0 0 - 0 Viva-Voce

 Total 30 20 10 30 240 360 600

4/5 B.ARCH 2nd SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR421 Practical Training 24 0 0 24 50 50 100 Viva-voce

 Total 24 0 0 24 50 50 100

Note: 24 weeks of Practical Training in an Architectural Firm

5/5 B.ARCH 1ST SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR511 Architecture Design-VII 9 2 7 9 50 50 100 Viva-Voce

AR512 Disaster Resistant 4 4 0 4 30 70 100 3 Hrs. Buildings and Management

AR513 Design Workshop 4 1 3 4 100 00 100 Viva-Voce

AR514 Elective-III a) Building 4 4 0 4 30 70 100 3Hrs Construction and Management
 b) Spatial Cognition-II

AR515 Architectural Dissertation 4 4 0 4 50 50 100 Viva-Voce

AR516 Seminar-II 2 2 0 2 50 50 100 Viva-Voce

AR517 MOOCS-2 - - - - 0 0 00 Viva-Voce

 Total 27 17 10 27 310 290 600

5/5 B.ARCH 2ND SEMESTER

Code Title of Subject Scheme of Instruction Scheme of Examination Duration

 Credits Lectures Drawing Total Internal External Total of exam (periods/ (periods/ (periods/
 week) week) week)

AR521 Architecture Design 25 4 21 25 50 50 100 Viva-Voce Thesis

AR522 Professional Practice & 4 4 0 4 30 70 100 3 Hrs. Legislation

 Total 29 08 21 29 180 120 300

**LIST OF ELECTIVES**

 6th sem **Electives-I**

 AR326 (a) Interior Design (Professional Elective)

 AR326 (b) Architectural Journalism (Professional Elective)

 AR326 (c) Barrier free Architecture

 7th sem **Electives-II**

 AR416 (a) Architectural conservation

 AR416 (b) Spatial Cognition-I

 AR416 (c) Advanced Construction

 9th sem **Electives-III**

 AR514 (a) Building Construction and management (Compulsory course)

 AR514 (b) Spatial Cognition-II

**Compulsory Courses**

 AR421 : Practical Training

 AR522 : Professional Practice & Legislation

**Skill Enhancement Course**

 AR327: Soft skills

4th Year Ist Semester

Ar 411: Architectural Design – Vi

Credits 08 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 02 Internal Marks 50

Tutorials/ drawing (periods/week) 06 External Marks 50

**Course objectives:**

To understand complexities involved in built spaces that have huge footfalls. The nature of way finding behaviours in familiar and unfamiliar spaces is discussed. Design issues related to multi-functional (flexible spaces) and workspace architecture in different typologies of buildings. Barrier free and emergency safety design issues and provision for building services are dealt with. Emphasis is on how design of spaces considering all these issues can improve human performance and building efficiency.

Course Content

Following building typologies that have more footfalls of users are dealt during the semester. One major design exercise and Two minor design problems are given for the semester. Commercial / Recreational / Industrial / Terminal building typologies like shopping malls, corporate offices, conventional center, multiplex, museums, workshops, factories, bus terminal etc. could be considered during the semester.

**Note:** One major exercise (8 weeks) and two minor design (6weeks) problems shall be conducted. Use of ‘SKETCHUP’ software in development of design concepts and other related work during continues assessment of the major and minor design problems shall be compulsory. The final portfolio submission in REVIT software and a model for the main problem shall be compulsory.

**Assessment:**

Major design problem carries 30 marks and minor design problem carries 20 marks. Students will submit portfolio specified by the design faculty and attend external viva-voce to be conducted by an external examiner.

**Course Outcome:**

At the end of the semester students would be able to address and realize complex design issues of building typologies that have huge footfalls. They understand emergency responsive design, barrier-free design requirements and specific building services that need to be installed in respective building typologies.

References:

1. The Architects Handbook – Quentin Pickard

2. Corporate Interiors, No11 – Roger Yee

3. Handbook on functional requirements of Industrial Buildings (lighting and ventilation) – Indian Standard Institution

4. Time savers standards of Building Types – Joseph De Chiara & others

5. A History of Building Types – Nikolaus Pevsner

6. Architects‘ Data - Ernst Neufert

Ar 412: Building Services - IV

Credits 04 Duration of Exam 3.00Hrs.

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Course Objectives:**

To Orient students on Special Services in High rise Buildings such as vertical transportation, fire safety systems & its design in buildings; specialty services required in hotels, sensitize students with Environmental management issues in buildings.

Course Content

**UNIT I: Vertical Transportation:**

\* Lifts: Working methods as per NBC and industry standards, Capacity, Parts of lift and location of them in the building, Types of lifts - passenger, capsule, hospital, goods.

\* Introduction to escalators and travelators.

**UNIT II: Fire Safety in Buildings:** Fire, causes of fire and spread of fire, firefighting, protection & fire resistance, equipment & methods of fighting fire, Code of fire safety, fire regulations, and combustibility of materials. Structural elements and fire resistance, planning and design of Fire escape routes and elements, wet risers, dry risers, sprinklers, smoke detectors, fire dampers, fire doors, water curtains etc.

**UNIT III: Special Services in High-rise Buildings:**

• Cooking gas distribution in High-rise buildings

• Garbage chutes

• Lightning arresters

**Electronic Systems in Buildings:**

• Security systems, burglar alarms, video surveillance, access control.

• Elevated flooring for computer application.

**UNIT IV: Swimming Pools**: General layout, Pool tank design, finish, filtration plant and water circulation, cascades, channels.

• **Hotel Service:**

• Laundry services, • Kitchens

• **Helipad:** • Usage and importance of Helipads, basic considerations to constructing a Helipad, construction of Helipad, examples.

**UNIT V: Environmental Services:** Waste generation in buildings, various types of waste – solid, liquid, gas, treatment and disposal facilities, waste management in hospital buildings.

• **Alternative Energy Sources for Buildings**: Hot water solar energy system, applications of photo voltaic cells, biomass digesters, wind energy.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Course Outcomes:**

\* The course enhances the advanced Study on services required for a building.

\* Students are familiarized with the Special Services in High rise Buildings.

**References:**

1. Handbook of Designing and Installation of Services in High Rise Building - V.K.Jain.

2. Principles of Fire Safety Engineering: Understanding Fire and Fire Protection- Akhil Kumar Das.

3. Heating and Air Conditioning of Buildings – Oscar Fabes and others.

4. Water and Energy Resources – Satish Tiwari

5. Refrigeration and Air Conditioning – Manohar Prasad

6. National Building Code of India, 2016.

Ar 413: Working Drawings-II

Credits 06 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 02 Internal Marks 50

Tutorials/ drawing (periods/week) 04 External Marks 50

**Course Objective:**

To Enable and train the students to illustrate and prepare the drawings good for construction for effective execution at construction site explaining the building services scheme inside and outside of the building envelop but within the site.to teach the students the specifications for the various internal and external finishes. To teach the students various fabrications which shall be required for the successful completion of the project.

Course Content

The architectural drawings prepared in subject: Working Drawings-I in the previous semester shall be continued for preparation of services layouts. The building drawings so prepared become part of the contract documents with proper labelling and dimensioning, specification and detailing.

**Unit I: Building Services Drawings (External)** Preparation of detailed drawings:

\* water supply source and connections

\* Sewage disposal and storm water disposal system, rain water harvesting systems, landscape details if required.

\* Construction details of Septic tank/STP, Sump, Overhead water tank etc.

\* Construction details of a Swimming pool along with its supporting services and its details for a size of a residence.

**Unit II: Building Services Drawings (Internal)**

\* Preparation of drawings like kitchen, toilets and other utility spaces along with specification of fixtures.

\* Plumbing layouts of kitchen and toilets.

**Unit III: Building Finishes & Interiors Design**

\* Flooring patterns and specifications, Fabrication like gate, railings, fencing etc. and their specifications , Boundary wall design, fixtures and their specifications

\* Preparation of suspended ceilings drawings with different materials like colloquial and innovative materials in use and finishing including fixing details of lighting fixtures and diffusers for ventilation and air conditioning.

\* TV Unit and Wardrobes design and its details with finishes and hardware fixtures and its specifications.

\* Special doors and windows constructions details with hardware details and specifications.

**Learning strategy**

\* Preparation of drawings with illustrations

\* Site visit and case studies to know the various details

\* Data collection from the market survey regarding construction material and detailing

**Assessment**

The drawings will be assessed Unit Wise, i.e., each unit carries 15marks each and 5 marks for attendance. Student has to submit final portfolio for external viva-voce conducted by external examiner for 50 marks.

**Course outcome:**

By the end of this semester the student will be able to prepare all set of detail drawings including building services drawings for construction at a site.

References

1) Architectural working drawings – Ralph W.Liebing, Mimi Ford,Raul

2) Architectural Graphics by Francis D. K. Ching

3) Architectural Graphics Standard by Charles George Ramsey

4) Architectural Graphics Standard for Residential Construction by Dennis J. Hall

5) Drafting & Design: Basics for Interior Design by Travis KellyWilson

6) Osamu, A. W., Linde, R. M. and Bakhoum, N. R. (2011). The professional practice of architectural working drawings. 4th Ed. Hoboken: John Wiley & Sons.

7) Weston, R. (2004). Plans Sections Elevations – Key buildings of the twentieth century. London: Laurence King Publishing.

AR 414: Urban Design

Credits 04 Duration of Exam 3Hrs

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Course Objectives:**

• To understand the scope and nature of urban design

• To understand the evolution of historic cities urban form

• To familiarize the theories of urban design

• To introduce the components of a city and their interdependencies and interpret the city in different ways and layers

• To familiarize with the implementation processes and create awareness of contemporary urban issues.

**UNIT VIII: Best Practice in Urban Design :** Contemporary case studies and emerging trends from developing and developed economies that offer design guidelines and solutions to address various issues/ aspects of urban space – case studies.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Outcomes:**

Students are exposed theories of urban design, and contemporary trends and different methodologies and approaches in urban design

**References:**

1) City in History, Its origin transformation & its prospectus- Mimford, Lewis.

2) Design of Cities-Bacon, Edmund.

3) History of the City- Benevolo, Leonard.

4) Urban Space-Rob Krier

5) Urban Design, The Architecture of Towns, & Cities-Spreiregn, Paul.

6) Urban Design Street & Square-Moughtin, Cliff

7) Urban Design Ornament & Deocotation-Moughtin, Cli

8) Urban Design Green Dimensions-Moughtin, Cliff

9) Image of the city – Kevin Lynch

10) The Urban Pattern – Gallion – Eisner

Course Content

**UNIT-I: Introduction to Urban Design :** Relationship between Architecture, Urban Design and Urban Planning; brief review of the evolution of the urban design as a discipline. Components of urban space and their interdependencies- outline of issues/ aspects of urban space and articulation of need for urban design- scope and objectives of urban design as a discipline

**UNIT II: History of Cities and Urban Form** : ***Western***: morphology of early cities- Greek agora- Roman forum- Medieval towns- Renaissance place making- ideal cities – Industrialization and city growth- the eighteenth century city builders Garnier’s industrial city- the American grid planning- anti urbanism and the picturesque- cite industrielle- citte nuovo-radiant city . Modern movements in city design such as ‘city-beautiful, Garden city utopian and model towns in the west.

***Indian:*** evolution of urbanism in India- Temple towns- Mughal city form- medieval cities - colonial urbanism- urban spaces in modernist cities: Chandigarh, Bhuvaneshwar and Gandhi Nagar- subsequent directions – case studies

**UNIT III: Theories of Urban Design :** Ideas of Imageability and townscape: Cullen, Lynch- place and genius loci- collective memory- historic reading of the city and its artifacts: Rossi- social aspects of urban space: life on streets and between buildings, gender and class, Jane Jacobs, Wiliam Whyte, pattern language-Christopher Alexander,

**UNIT-IV: Urban Design Elements, Typologies and Procedures :** Understanding the city as a three dimensional element; determinants of Urban form Organization of spaces and their articulation in the form of squares, streets, vistas and focal points.Concepts of public and private realm; understanding different types and procedures of urban design interventions their scale relationships; constraints and challenges of urban design in democratic versus authoritarian settings.

**UNIT-V: Urban Landscape :** Design of streets, public parks, green ways, parkways, promenade Park systems, water fronts, and plaza. Public art. Plant selection criteria, furnishings and lighting of public space, maintenance and management of public spaces and parks, Open space development in urban design context and new towns. Green infrastructure. Urban ecology, urban water sheds.

**UNIT-VI: Urban Design and Sustainability :** Sustainability concept; Relationship of urban design with economic, environmental and social sustainability; Urban renewal and urban sprawl; Concepts of Transit Oriented Development, Compact City, Healthy City and Walk able City;

**UNIT-VII: Urban Design Implementation :** Urban design and its control; Institutional arrangements for design and planning, their roles, powers and limitations; Types of planning instruments, structure plans, master plans and local area plans and zoning guidelines; Design communication and role of public participation.eg. smart cities, HRIDAY, PRASAD etc.

**UNIT VIII: Best Practice in Urban Design :** Contemporary case studies and emerging trends from developing and developed economies that offer design guidelines and solutions to address various issues/ aspects of urban space – case studies.

**Assessment :**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Outcomes:**

Students are exposed theories of urban design, and contemporary trends and different methodologies and approaches in urban design

References:

1) City in History, Its origin transformation & its prospectus- Mimford, Lewis.

2) Design of Cities-Bacon, Edmund.

3) History of the City- Benevolo, Leonard.

4) Urban Space-Rob Krier

5) Urban Design, The Architecture of Towns, & Cities-Spreiregn, Paul.

6) Urban Design Street & Square-Moughtin, Cliff

7) Urban Design Ornament & Deocotation-Moughtin, Cli

8) Urban Design Green Dimensions-Moughtin, Cliff

9) Image of the city – Kevin Lynch

10) The Urban Pattern – Gallion – Eisner

AR 415: Structures Design Project

Credits 04 Duration of Exam Viva-Voce

Lectures (Periods /week) 04 Internal Marks 50

Tutorials/ drawing(periods/week) 00 External Marks 50

Course Content

The students are free to choose any one of the structural design project mentioned below.

1. Structural Design Project: structural design calculations and structural drawings of a G+1 RCC framed residential building.

2. Structural Design Project: a steel truss including design calculations and structural drawings.

**Assessment:**

Two stage assessment are to be conducted each carrying 15 marks, 10 marks for report submission and 10 marks by the guide, i.e. 30+10+10 =50M. Each student should make oral presentation for the external Viva-voce conducted by the external examiner and internal guide for 50 marks.

Stage 1: The group /student should submit the drawings related to Proposed RCC G+1 plan/ Steel Truss. Each student should submit complete analysis of the RCC frames/ Steel truss. Drawings:

RCC G+1 plan: Plinth beam layout, Floor beams layout, Column centre line, Trench drawings, 2-D frames along with loads on each frame and reactions, moments etc.

Steel Truss: Type of truss with its span, truss with loads acting, truss with calculated reactions and load on each member.

Stage 2: The group /student should submit the structural drawings related to the project. Each student should submit complete design of different elements in the structure.

**Course outcome:**

The student acquires basic knowledge on the design of structures.

Reference:

1) Design of reinforced concrete structures by Ramamrutham, Publishers : DhanpatRai

2) Limit state Design of Steel structures by S.K. Duggal, Publishers: Tata McGraw-Hill

3) Indian standard codes

AR 416 (A): (Elective II): Architectural Conservation

Credits 04 Duration of Exam 3Hrs

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Course Objectives:**

The student will understand the various practices of Conservation in India and familiarize with the various agencies involved in the field of conservation.

Course Content

**UNIT I: Introduction to Conservation** : Understanding Heritage; Types of Heritage.

Heritage conservation: Need and purpose. Definitions of Conservation, Preservation and Adaptive reuse. Distinction between Architectural and Urban Conservation. Conservation related charters, International agencies like ICCROM, UNESCO and their role in Conservation.

**UNIT II: Conservation in India :** The role of Archeological Survey of India (ASI) and INTACH in heritage conservation. Central and State Government policies and legislations in India; INTACH Charter. Norms for Grading and Enlisting of heritage sites.

**UNIT III: Conservation Practice :** The role of conservation architect, Values and ethics in conservation, degrees of intervention such as prevention of deterioration, preservation, consolidation, restoration, rehabilitation, reproduction and reconstruction. Listing of monuments- documentation of historic structures- assessing architectural character, inventory, and initial inspection of buildings and preparation of historic structure report.

**UNIT IV: Urban Conservation :** Understanding the character and issues of historic cities – select case studies of towns like Srirangaram, and Kanchipuram-historic districts and heritage precincts.

**UNIT V: Conservation Planning :** Conservation as a planning tool- financial incentives and planning tools such as Transferable Development Right (TDR)-urban conservation and heritage tourism-case studies of sites like for Cochin, Pondichery French town.- conservation project management.

**Note:**

Students have to make a document of at least two heritage buildings and prepare historic structure report. The department has to arrange a case study of heritage building/ Precinct to study and understand aspects of preservation, rehabilitation and adaptive re-use adopted in the study area.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the University academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for documentation of heritage building and structure report i.e. total marks will be (20M+10M)=30M.

**Course Outcomes**

The student understands the various practices of Conservation in India and the role of conservation architect in preservation, conservation and restoration of heritage buildings.

**References:**

1) Protection, Conservation and Preservation of Indian Monuments- Shanti Lal Nagar

2) Architectural and urban conservation- Santosh Ghosh, Ranajit Gupta, Sumita Gupta

3) History of Architectural Conservation- Jukka Jokilehto

4) James M. Fitch, “ Historic Preservation: Curatorial Management of the Built World” University Press of Virginia; Reprint edition, 1990

5) Robert E. Stipe, A Richer Heritage: Historic Preservation in the Twenty-First Century”, Univ. of North Caroling press, 2003.

6) Conservation Manual, Bernard Fielden; INTACH Publication, 1989.

7) Architecture in Conservation: Managing Development at Historic Sites (Heritage: Care Preservation-Management) –James Strike

AR 416 (B): (Elective II): Spatial Cognition-i

Credits 04 Duration of Exam 3Hrs

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Course Objectives:**

The course will examine behavioural factors of humans in environments they live through critical thinking, discussions and case studies. The emphasis is on how the environments around influence human behavior while performing activities and how humans perceive, use and adapt to surrounding environments. A variety of built and natural environments will be discussed ranging from interior to exterior spaces and from private to public spaces to evaluate human performance, health and wellbeing.

Course Content

**UNIT - I :** Introduction to Cognitive Psychology and importance of the subject and relevance to architecture, Familiarizing terms of Environmental psychology and Architectural psychology

**UNIT - II :** Built environment – Space, Time, Activity and Human behavior

**UNIT-III:** Cognitive functions –Perception and Attention, Memory and Knowledge, Problem solving, Reasoning and Decision making

**UNIT-IV:** Methods of case study, Post occupancy evaluation (POE), Questionnaires relating to Health and Wellbeing

**Assignment:**

After literature survey and deliberation in classroom sessions, students select a topic of interest either of interior/exterior spaces ranging from private to public scale. They perform POE and analyse the behavioural aspects with relevance to architecture for improving human performance and thereby health and wellbeing.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Outcome:**

At the end of the semester students would be able to, Use critical thinking to analyze and synthesize information with regard to behavioural factors in specific design projects Interpret theories and knowledge of human behavior related to environmental design Use effective written, oral and visual communication to explain behavioural considerations in design Understand designers social responsibility in addressing the impact of built environment on human performance, equity and health and wellbeing issues

References:

1) A Pattern Language, Christopher Alexander and Murray Silverstein

2) Image of the City, Kevin A. Lynch

3) Cognitive Psychology, E. Bruce Goldstein

4) E-prime Psychology software tools tutorials

5) MS Excel tutorials

Journals

1) Environment and Behaviourhttp://eab.sagepub.com/

2) Journal of Environmental Psychology http://www.journals.elsevier.com/journal-of-environmental-psychology

Websites

1) https://www.brikbase.org

2) www.anfarch.org/research/recommended-reading

3) https://architecturalpsychology.org

AR416 (c) :( Elective-II): Advanced Construction

Credits 04 Duration of Exam 3Hr.

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Course Objectives:**

Understanding the importance of advanced building construction and their application in building industry.

Course Content

**UNIT I** : Beams and Slabs, Portal frames-Plane, Space Frames/Trusses, single and double layer grids, Braced and folded grid structures.

**UNIT II :** Arches and catenaries; vaults, domes - braced domes, ribbed domes, Network domes, Lamella domes, Geodesic domes

**UNIT III :** Folded plates, shells, cycloidal shells, the domical shell, Hyperbolic paraboloids.

**UNIT IV :** Advanced Construction Methods: Pre-stressed concrete beams slabs frames, lift slab construction, post tensioning, multi-storied building frames, circular slabs and beams. Pre-Engineered (Pre-Cast) Concrete.

**UNIT V :** Study suspended roofs, membrane structures, cable structures. Study of Pre-engineered building systems (steel), various components, forms and their advantages.

**UNIT VI :** Multistoried / Tall Structures / Towers.

**UNIT VII :** Curtain walls: types of curtain walls, components, structural solutions, construction and erection. Glass wall system-glass; sheet metal wall systems sheet metal cladding, architectural skins

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Note:**

The choice of the topic for the workshop will depend on the resource persons available.

**Course Outcomes:**

Student will be able to identify the structural forms, suitable for architectural expression.

Reference:

1) l. Shell Structures-Rama Swamy.

2) Prestressed Concrete-Krishnam Raju.

3) Great Engineers-Derek Walker

4) Multi-Storey Buildings in Steel-F.Hart, W.Henn, H.Sontag

5) Precast Concrete-Design and Applications-A.M.HASS

6) Development in Structural form-Rowland Mainstone

7) Structural Concepts & Systems for Architects-TY Lin, Sidney, D.Stotesbury

8) Principles of Space Structures-N.Subramaniam.

9) Reinforced Concrete- in Architecture-Aly Ahmad Raafat.

10) How Buildings Work-Edward

11) Contemporary Structures in Architecture - Michaels, Leonard..

AR 417: MOOCS - I

Credits (Non Credit Course) 0 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 00 Internal Marks —

Tutorials/ drawing(periods/week) 00 External Marks —

This is non-credit course. At the starting of the semester a list of subjects offered by SWAYAM/ NPTEL shall be given by Head of Department.

**Assessment:**

This process will be looked by a committee of members with HOD, Chairman, BOS and an expert in the field to be nominated by the Principal on recommendation from the department shall examine and declare whether the student has completed/ not completed the course.

4th Year 2nd Semester

AR421: Practical Training

Credits 24 Duration of Exam Viva-Voce

Lectures (Periods /week) - Internal Marks 50

Training period (periods/week) 24 weeks External Marks 50

Course Content

Practical Training shall commence on the reopening day of Fourth Year 2nd Semester. The students shall undergo practical training in the office/ organization where architecture and its related practice are carried out and under the guidance of the professional who is registered with Council of Architecture, India with a minimum of 5 years professional standing. In case the student opts to go abroad he / she will work under the guidance of the professional who is registered with the council / any other organization controlling the profession of Architecture in the respective country. The students will decide very carefully about their placement venue as it is expected that they learn best ethics in Professional Practice.

During this training, students should have to work on Architectural projects and information include Preparation of schematic designs, Sanctioned drawings, Architectural drawings of various projects, Working details/ drawings Preparation of BOQ’s, Projects Reports, Meetings with clients Site visits and Presentation drawings by using REVIT Architecture, Sketchup, 3D Max, Photoshop etc., Other works if any;

**Duration**

The total duration of the training will be minimum 135 working days (excluding the holidays). The student may allow maximum of 10% of total working days as leaves, more than which subject to discretion of University to permit him/her for the Viva-Voce.

**Note**

The students shall prepare a Training Report or in a formal Log Book containing week by week, which will cover detailed record of the work done in the office, site visit reports, interviews with clients and any other agency, interaction with principal architect etc.

**Assessment**

Continuous Assessment for Practical Training shall be done for a weightage of 60% of the total marks assigned by the principal architect of the office/organization in whose office the candidate is undergoing training. During training period , the principal Architect will give three assessments in given format for every 8 weeks on his/her reflection about the student’s work and his overall approach and attitude towards the office work. 20% of the total marks will be assigned for number of days attended.

During training period, 20% of internal marks will be awarded by the internal examiner (s) of the practical training (nominated by the Hon. Vice-Chancellor) for the submitted portfolio of works at the end of the Semester.

A candidate who secures not less than 50% of the total marks prescribed for Practical Training and a minimum of 50% of the total marks prescribed for the Viva Voce examination shall be declared to have passed in the examination.

If a candidate fails to secure a pass in the Practical Training, of VIII semester he/ she shall repeat the course in the subsequent semester and it will be evaluated at the end of that semester.

**Outcome**

This experience is expected to enhance the students’ ability to think comprehensively and better prepare them for understanding and handling the Architectural Project work.

**External Viva-Voce Exam**

The students shall produce a log book, drawings with the permission of his employer duly signed by the principal architect for viva voce examination.

**Pre Dissertation**

Design Dissertation topic (project) shall be submitted to the department soon after completion of Practical training viva-voce. Dissertation project may be submitted based on ongoing, proposed development or new investigation in the related area.

Each student will be assigned a Thesis Guide (amongst the faculty), who will supervise the progress of the student’s work on a regular basis. Students are required to stay for a week for discussion on their topics with internal faculty.

5th Year 1st Semester

Ar511: Architectural Design-vii

Credits 8 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 02 Internal Marks 50

Tutorials/ drawing(periods/week) 6 External Marks 50

**COURSE OBJECTIVE:**

This Course will be dealing with the design of large scale multistory complex projects and aims to develop skills for a comprehensive design approach in the areas of URBAN DESIGN, HOUSING DESIGN and CAMPUS DESIGN.

Course Content

**Urban Design:** The issues are to be addressed for the Design Project pertaining to Urban Design includes:

• Issues of urban structure, urban space and form.

• Issues of conservation.

• Issues in zoning, land use, density, development control.

• Issues of building in context, urban infill.

• Integration of diverse functional needs, access systems, parking, services etc.

**Housing Design:** Some of the issues to be addressed for the design project pertaining to Housing design include:

• Urban density, land use, ground coverage, development controls.

• Urban systems, services and their integration with the project.

• User requirements (derived from surveys)

• Issues of hierarchy, identity, public, private, scale of space.

• Integration of community institutions etc.

• Detailing for the disable and the elderly.

**Campus Design:** Some of the issues to be addressed for the design project pertaining to Campus design includes:

• Issue of Master Plan preparation: academic, administrative, staff housing, student hostels etc.

**Phase – wise development**

• Environmental considerations.

• Safe and Comfortable vehicular and pedestrian movement.

• Issues of character and landscaping.

• Scope for expansion for future developments.

• Details pertaining to the disabled.

Students would need to undertake one of the design subjects for the studio exercise. Students may be required to develop a brief, translate it into requirements and realize it, in which the student will take approval of the project brief. The evaluation shall be through periodic internal reviews. The final submission will also include a brief report of about l000 words. Explaining the concept and design proposals along with the main portfolio. It will also include a model. Students should also to attempt a time problem of similar scale.

**Assessment:**

Major design problem carries 30 marks and minor design problem carries 20 marks. Students will submit all the materials specified by the design faculty and attend external viva-voce to be conducted by an external examiner.

**Viva Voce:** Student should submit their drawings and they should attend a practical Exam and Viva-voce conducted by both an external and an internal examiner.

References:

1) Campus Architecture.

2) Timesavers Standard for Housing and Residential Development.

3) Image of the City-Kevin Lynch.

4) Pattern Language- Christopher Alexander.

5) Defensible Space-Oscar Newman

Ar512: Disaster Resistant Buildings and Management

Credits 04 Exam 3 Hrs.

Lectures (Periods/Week) 04 Internal Marks 30

Tutorials/Drawing (Periods/Week) 00 External Marks 70

**Course Objective:**

To make the students to understand various types of disaster their significance, disaster prevention and disaster management cycle. To create awareness about natural disasters, factors that cause them, and to foster knowledge about strategies for disaster prevention and management.

Course Content

**Unit I: Introduction to Hazards & Disasters :** What is Disaster? Their Causes, consequences and after effects of disasters like Various types of Natural hazards and disasters- Earthquake, cyclone, floods, droughts, landslides, lightning, tsunami etc. & Man induced hazards & disasters- soil erosion-causes, conservation measures: nuclear explosion- environmental problems, corrective measures: fire mitigation measures; terrorism etc. Introduction to disaster management - Indian scenario, understanding of disaster, hazard and its classification, vulnerability, capacity, risk.

**Unit II: Disaster Preparedness, Response and Mitigation :** Disaster management Act and policy, Guidelines, NDMA 21

Disaster Management Mechanisms: national, state and district levels; select global practices; disaster and development; physical planning and disaster management plans; various role players in disaster management, relief measures of pre and post disaster – NGOs / CBOs and Armed Forces; Community Based Disaster Preparedness (CBDP), Disaster Risk Mitigation; Preparing hazard zone maps, Predictability/ forecasting &warning, Community preparedness.

**Unit III: GIS & Information Technology in disaster management :** Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster; Disaster Damage Assessment; applications and case studies.

**Unit IV: Design and Retrofitting of Buildings for Disaster Resistance :** Different architectural forms to resist different disasters. Basic characteristics of disasters: its behaviour and important parameters. Design, construction and detailing of buildings, materials and methods to be adopted for different disasters discussed in unit 1 and retrofitting of disaster affected buildings.

**Note:**

To enable the students their role in design and planning solutions for reduction of risk and damages caused shall be exposed through case studies.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Course outcome:**

By the end of the semester the student will be able to understand various types of disasters their causes, significance and effects of disaster. Students will gain an understanding of various Disaster Preparedness, Response, management and mitigation.

**References**

1) Goel.S.L, ‘Encyclopaedia of Disaster Management’

2) Government of India, (2004), ‘Disaster Management in India’ – A Status Report, Ministry of Home Affairs (Disaster Management Division), New Delhi.

3) Zebrowski, Ernest Jr, (1997)-, ‘Perils of a Results Planet: Scientific Perspectives on Natural Disasters’, Cambridge University Press, Cambridge.

4) Wind and Earthquake Resistant Buildings: Structural Analysis and DesignBy Bungale S. Taranath

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) Earthquake Architecture: New Construction Techniques for Earthquake Disaster Prevention by Belen Garcia

7) Heide, Auf der E (1989)-, ‘Disaster Response: Principles of Preparation and Coordination’, C.V.Mosby, Baltimore.

Disaster Management Mechanisms: national, state and district levels; select global practices; disaster and development; physical planning and disaster management plans; various role players in disaster management, relief measures of pre and post disaster – NGOs / CBOs and Armed Forces; Community Based Disaster Preparedness (CBDP), Disaster Risk Mitigation; Preparing hazard zone maps, Predictability/ forecasting &warning, Community preparedness.

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3) Zebrowski, Ernest Jr, (1997)-, ‘Perils of a Results Planet: Scientific Perspectives on Natural Disasters’, Cambridge University Press, Cambridge.

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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) Earthquake Architecture: New Construction Techniques for Earthquake Disaster Prevention by Belen Garcia

7) Heide, Auf der E (1989)-, ‘Disaster Response: Principles of Preparation and Coordination’, C.V.Mosby, Baltimore.

AR 513: Design Workshop

Credits 04 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 01 Internal Marks 100

Tutorials/ drawing(periods/week) 03 External Marks 0

**Course objective**

This course will enhance learning through a combination of lectures, demonstration and interactive practical exercise sessions. Necessary theory background on the subject will be given to the students in the beginning. The students are required to involve themselves on a design focused on a specific theme for duration of one week to ten days. The students will produce outputs in the format as decided by the resource persons conducting through workshop.

Course Content

Suggested topics:

\* Alternative Technologies

\* Furniture Design

\* Intelligent Architecture

\* Product designing using recycled materials.

Stage 1: Understanding Design criterion

Stage 2: Arriving at Creative solutions through miniature model making

Stage 3: Hands on experience with innovative and latest technologies

Stage 4: Product presentation exercises and storyboard (Verbal presentation skills)

**Assessment:**

The continuous assessment will be done in three stages i.e., Understanding Design criterion; Arriving at Creative solutions through miniature model making and Hands on experience with innovative and latest technologies. Each stage weighs 20marks (20+20+20=60M). For Final viva-voce, Student should submit field book and should attend for Practical Exam and Viva -voce conducted by both an external and an internal examiner for 40 Marks.

**AR 514 (A): ELECTIVE-III: BUILDING CONSTRUCTION MANAGEMENT**

Credits 04 Duration of Exam 3.00Hrs.

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Objective:**

To provide an insight into Management of Buildings/Construction projects involving management of money, manpower and machinery.

Course Content

**Unit-1: Construction Organization :** Need for management of building/construction projects – role of Project or Construction Managers in the building industry. Aim, objectives and functions of Construction Management. Construction stages, Construction team, Role of an architect in construction management. Management techniques and tools.

**Unit-2: Construction Management Techniques** : Construction planning, scheduling and controlling phases. Bar charts and limitations of bar charts. Program Evaluation and Review Techniques (PERT); Critical Path Method (CPM) for project management; Development and analysis of CPM network; Cost time analysis in network planning; Scientific methods of construction management

**Unit-3: Construction Equipment** : The role of equipment/machinery in construction industry, factors affecting selection of construction machinery, standard versus special equipment, understanding of the various issues involved in owning, operating and maintaining of construction equipment, economic life of a equipment.

Brief description of earth moving (tractors, excavators, dragline, trenching equipment, etc.,) transporting (various types of trucks), spreading and compacting (motor graders and various types of rollers) and concreting equipment (including concrete mixers, transporting and pumping equipment)

**Assessment**

Two mid examinations (Maximum 20 Marks each) are to be conducted and average of the both are to be taken for 20M, and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M

**Outcome**

Students will equip with a practical approach to implement building projects, basic knowledge about construction industry, project management techniques needed for managing and coordinating building projects in a professional manner.

Text Books:

1) PERT and CPM by L. S. Srinath.

2) PERT and CPM by Punmia.

3) Estimating and Costing by B.N. Dutta.

4) Construction Management and Planning by Guna and Sen Gupta, B.

References:

1) Project Management for Construction by Chris Hendrickson, Carnegie Mellon University, Pittsburgh, 1998

2) Construction Planning & Management by Gahlot P S,, New Age International, Bangalore 2007

3) Construction Planning and Management by U.K.Shrivastava

4) Total Construction Project Management by George J Ritz

5) , Construction Technology by R. Chudley Pearson, 2005.

6) The Construction of Buildings by R. Barry, The English Language Book Society and Crosby Lockwood, Staples, London, 1976.

7) Construction Planning equipment and Methods by RL Peuriboy Tata McGraw Hill, 1979

8) Modern Construction and Management by Frank Harris John Wiley and Sons, 1983

AR514 (B): ELECTIVE – III: SPATIAL COGNITION-II

Credits 04 Duration of Exam 3.00Hrs.

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 00 External Marks 70

**Course Objective:**

The course will explore critical attributes of built environment that influence human behaviour manipulating their performance. The emphasis is on understanding attributes of built environment that facilitate differently abled user groups and universal design.

Course Content

**UNIT-I**: Introduction to E-prime and design of simple experiments – design, execution and analysis of experiment

**UNIT-II:** Application of Cognitive Principles in Design Principles, Elements of Design

**UNIT-III: Universal / Inclusive Design**: Application of Cognitive science in design of spaces for complex activities and or barrier free environment for different user groups

**UNIT-IV: Analysis and presentation of data**: Analyze and synthesize information of the experiment with respect to behavioural factors to assess human comfort

**Assignment:**

After deliberation in classroom sessions, students select a topic of interest for a particular group of people viz. old-age, children, physically challenged, cognitive disorders, NCD etc. They design an experiment on E-prime to evaluate the behavioural aspects and architectural relevance to improve human performance for health and wellbeing.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for assignment i.e. total marks will be (20M+10M)=30M.

**Outcome:**

At the end of the semester students would be able to,

\* Acquaint with tools and techniques to conduct experiments on spatial cognition and human behaviours.

\* Conduct applied research on environment-behaviour relationship through operation and analysis of numerical data or observable facts

\* Analyze and synthesize information with regard to behavioural factors to assess human comfort

\* Present effective written, oral and visual communication to explain behavioural considerations in design

\* Acquaint with user-centred approach in design.

**References:**

1) A Pattern Language, Christopher Alexander and Murray Silverstein

2) Image of the City, Kevin A. Lynch

3) Cognitive Psychology, E. Bruce Goldstein

4) E-prime Psychology software tools tutorials

5) MS Excel tutorials

**Journals**

1) Environment and Behaviourhttp://eab.sagepub.com/

2) Journal of Environmental Psychology http://www.journals.elsevier.com/journal-of-environmental-psychology/

**Websites**

1) https://www.brikbase.org

2) www.anfarch.org/research/recommended-reading

3) https://architecturalpsychology.org

AR 515: Architectural Dissertation

Credits 03 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 04 Internal Marks 50

Tutorials/ drawing(periods/week) 00 External Marks 50

**Course objective**

Dissertation is seen as a culmination of the development of the student’s knowledge, attitudes and skills over the course of studies of Architecture. Ultimately, to make the students equip in and Data Collection, Analysis and Research of Architecture and Planning, Urban and Rural development and Socio-Economic conditions.

Course Content

**UNIT – I** : Scope for Design/ Dissertation: Topics / projects related to architecture and Planning

\* Rural and Urban redevelopment projects

\* Landscape projects

Contents of report

\* Introduction

\* Literature study and case study

\* Analysis and Inferences

\* Conclusion

**NOTE**

Design dissertation topics (project) shall be submitted to the department by each student soon after completion of Practical training viva-voce of previous semester. Projects may be based on ongoing, proposed development or new investigation in the related area. Each student will be assigned a Thesis Guide (amongst the faculty), who will supervise the progress of the student’s work on a regular basis. Students are required to proceed for Case studies and Data collection of their respective approved dissertation topics in consultation with their Guides.

**Assessment:**

Two assessment will be conducted by two presentations and one report i.e. each presentation carries 15 marks and 10 marks for report and 10 marks by the Guide i.e., of (30+10+10=50M). Student has to make a presentation for external Viva-voce conducted by external examiner.

VIVA-VOCE: Submission of report with oral and visual presentation of drawings, photographs, analysis of literature, case studies and conclusions.

**Course Outcome:**

Student is expected to develop a subject of his or her own choice and to demonstrate the ability to use effectively the tools of independent investigations and judgment to evolve design criteria. The application of these may be original design or research oriented work.

AR 516: Seminar-II

Credits 02 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 02 Internal Marks 50

Tutorials/ drawing(periods/week) 00 External Marks 50

**Course objective**

To impart knowledge base design of energy efficient buildings and develop awareness on energy rating systems and performance evaluation. To build knowledge base on development of building systems and management.

Course Content

**Unit 1: Green Buildings and Rating Systems :** Passive design considerations; active systems; design for energy efficient building- day lighting and natural ventilation; technologies for alternative sources of energy; Net Zero buildings; software tools for the design of a building and the performance evaluation of a building with respect to energy; Rating systems: IGBC, LEED, GRIHA.

**Unit 2: Building Systems Integration and Management :** System and Sub-systems in buildings, relationship and analysis of sub-systems; Building systems for different building typologies, Optimization and sub-system; Control systems for various buildings services, Types of controllers. Preparation of necessary drawings for installing control systems, Integrated building management system, remote monitoring and management, Home automation, Developments in service control systems.

**Assessment**

Two Continuous assessment will be conducted as per the syllabi by assigning two presentations and one report i.e. each presentation carries 20 marks and 10 marks for report i.e., of (20+20+10=50M). Student has to make a presentation for external Viva-voce conducted by external examiner.

Student has to make a presentation for external Viva-voce conducted by external examiner.

**Course outcome**

The course is designed to develop skills on designing and evaluation of energy efficient buildings and building systems integration and management.

AR 517: MOOCS-2

Credits (Non Credit Course) 00 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 00 Internal Marks —

Tutorials/ drawing(periods/week) 00 External Marks

This is non-credit course. At the starting of the semester a list of subjects offered by SWAYAM/ NPTEL shall be given by Head of Department.

**Assessment:**

This process will be looked by a committee of members with HOD, Chairman, BOS and an expert in the field to be nominated by the Principal on recommendation from the department shall examine and declare whether the student has completed/ not completed the course.

AR521: Architectural Thesis

Credits 25 Duration of Exam VIVA-VOCE

Lectures (Periods /week) 02 Internal Marks 50

Tutorials/ drawing(periods/week) 23 External Marks 50

**Course Objective**

To expose and to provide opportunity to the students to exercise full fledged large scale Architectural Design with holistic approach including site investigation, programme formulation, and design demonstration.

Course Content

Every candidate shall submit at the end of the Xth Semester a thesis on a subject approved by the Thesis Review Committee constituted by the Head of the department which shall comprise of the Head of the Department, Thesis Coordinator and one external architect (practicing).

The architectural project shall consist of: Design Demonstration i.e., Formulation of Design Programme, Site investigation, and selection, and culmination in a concrete design demonstration.

**SUBMISSION WORK:**

Architectural Project shall consist of a DESIGN SOLUTION: Since the Architectural is the culmination of five years of learning in various aspects of Architecture, it is expected that students demonstrates an ability of holistic and comprehensive thinking in the areas of Site Planning

• Structural considerations

• Interior space planning

• Environmental planning

• Building Services

• Climate responsive, Energy efficient and exhibiting qualities of sustainable architecture.

• Architectural Detailing through graphically presented Design solution in the form of sufficient number of architectural drawings, (manually drawn/computerized) with models etc.

**Assessment**

The Internal assessment of “Architectural Project” shall be carried out STAGE WISE as decided by the department. The thesis shall be evaluated by the Review Committee through continuous internal assessment with a minimum of 4 reviews out of 50 marks.

VIVA\_VOCE for 50 marks shall be reserved for submission of project report, appropriate scaled model and for oral presentation assessed by External Examiner(s) in which the student will display his work on the space allotted to him and explain his work and answer all the queries raised by the Examiners. The Time allotted per student shall be minimum 30 minutes to maximum 45 minutes.

**Stage l (Synopsis) :** Introduction, Validity, Aims & Objective, Methodology, Site Conditions and tentative space requirement

**Stage ll** : Synopsis, Case Studies, Data Analysis, Library study and Framing of the requirements, Design philosophy.

**Stage lll** : Concept, Pre-Final design proposal and Block Model. Detailed working drawings showing any two of the following services: Air-conditioning, Landscape, Structure, Interior detailing, Water supply & Sanitation or any other detail. Hard Bound report.

**Stage IV :**Final design proposal along with model/views, to be evaluated by external examiner.

**Note: Teaching & Evaluation system**

The thesis studio will be conducted under the overall coordination of the thesis coordinator. In addition, one members of the Visiting/Expert Faculty would also be associated throughout the duration of the studio. Each student will be assigned a Thesis Guide (amongst the faculty), who will supervise the progress of the student’s work on a regular basis.

Ar522: Professional Practice and Legislation

Credits 4 Duration of Exam 3HRS

Lectures (Periods /week) 04 Internal Marks 30

Tutorials/ drawing(periods/week) 0 External Marks 70

**Course Objective**

To Communicating – the communication and documentation of designs for presentation to clients and other stakeholders, and for construction; the preparation of professional reports. To Managing – the management and operation of a design practice.

Course Content

**Unit 1: Introduction** : Introduction to Architectural profession, Role of professional bodies, The Architect’s registration act 1972. CODE PROFESSIONAL CONDUCT; COA rules; Scale of charges; units and mode of measurements clerk of work and his duties; inspection of work during construction; certificate of payment to contractor; skills of quantities; schedule of rates, tenders; public, limited and negotiated tender documents and allied formalities.

**Unit 2: The Profession** : Role of Architect in society; Architectural Profession as compared to others professions; difference between profession and Mode/business; architect’s registration, COA, and other organisations related to architectural profession.

**Unit 3: Agreements** : The duties, liabilities and relationships of client, contractor and other technicians. Conditions of engagement of Architects. Scale of remuneration for Architectural services and mode of payments.

**Unit 4: Contracts & Tendering** : **Contract**: Definition - General principles of Indian Contract Act; Building contracts generally, Conditions and forms of contract, study of standard contract of the Indian Institute of Architects. Principle of Arbitration, Powers and duties of arbitrators, revoking authority. Contract agreement & its necessity; Articles of Agreement, Terms and Conditions, Bills of Quantities and specifications, Appendix; Certification of Contractors Bills at various stages. New trends in project formulation and different types of execution (BOT, DBOT, BOLT, BOO, etc).

**Tender**s: Definition, Types of Tenders, Open and closed tenders, Conditions of tender, Tender Notice, Tender documents. Concept of EMD –Submission of tender; Tender scrutiny - Tender analysis Recommendations –Work order - E-tendering (advantages, procedure, conditions).

**Unit 5: Administration :** Accidents during progress of work and after completion, damage to persons and properties affected; scope of torts Act and workmen’s compensation Act with regards to the affected persons and properties; Consumer protection Act and related acts on Architects. Practice Architects Act 1972; Professional Practice Regulation and architectural education regulations under the Architects Act. Role of consultants and coordination between different consolations on a big project.

**Unit 6: Starting a practice :** Mode of engaging an architect – Comprehensive services, partial services and specialised services – Scope of work of an architect –Schedule of services – Scale of fees (Council of Architecture norms) – Mode of payment – Terms and conditions of engagement – Letter of appointment. Importance of Architectural competitions – Types of competitions. COA guidelines for competitions. Importance and type of presentation of designs and allied skill development.

**Unit 7: Employment Law:** Important legal aspects and legislations which have a bearing on the practice of architectural profession with particular reference to WTO and GATS and equip them for international practice. Copy rights and Patenting such as provisions of copy right acts in India and abroad, copy right in architectural profession.

**Note**

Lectures by practicing architects are to be arranged to create awareness on basic knowledge of the nature of practice, and professional roles, organizational frameworks, management and legal procedures.

**Assessment:**

Two mid examinations (Maximum 20 Marks each) are to be conducted as per the university academic calendar and average of the both are to be taken for consideration for 20 and 10 Marks for continuous assessment i.e. total marks will be (20M+10M)=30M.

**Course Outcomes**

The student will gain an insight about professional conduct and the practice of architecture.

References:

1) Theory and Practice of Valuation- Roshan Namavati

2) Professional Practice- Dr.RoshanH.Namavati

3) Principles and Practice of valuation- Mr.D.N.Banerjee

4) Land Law- By Patrick J.Dalton

5) Hand book on Professional Practice, COA Publication