

38. FIFTH SEMESTER SYLLABUS

Sem	Subject Group	Course Code	Subject	Hours/week			Credits	Marks			
				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	I (a)	19AR05001	Architectural Design 5		10		10	250	250		500
Course Overview:											
<p>Spatial planning of a multistoried built form with an emphasis on services</p> <ul style="list-style-type: none"> To instill the importance of service integration in spatial planning and Detailing in multi-storied building Design. To understand the complexities involved in the design of multi-storied building. The design parameters shall include climatic response, structural system, appropriate material, universal design standards and services such as sanitary and water supply, lighting and ventilation, firefighting, lifts, escalators, etc. To understand the derivation of structural grid and functional grid. To create an awareness of Building rules/National Building code of India /other regulations such as cinemas regulation act, CRZ, firefighting etc. Sustainable design objectives: To equip the students to adopt sustainable design techniques considering climate, building envelope, HVAC, Natural and green certified materials, natural lighting and fresh air ventilation such as Rainwater harvesting, passive cooling techniques, use of low embodied energy materials etc. To introduce students to green building rating systems – IGBC/GRIHA/LEED etc. 											
Course Outcomes:											
<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> Have an understanding of efficient service integration in built environment Develop a design approach considering the sustainability principles and resource savings through efficient service incorporation. Learn about efficient integration of vertical and horizontal circulation in a building 											
Major Project											
<p>Design of a single multi storied building (built up area not exceeding 2500 SQM distributed in different levels, preferably high-rise) in a specific context to learn the complexities of service integrated design of a complex built environment. Projects such as hospital, hotel, high rise residential, long span structure etc. may be considered</p> <p>Emphasis may be given on:</p> <ul style="list-style-type: none"> Structural and functional grid Service integration Universal access Fire fighting requirements Facades Parking efficiency Site services 											
Minor Project											

Settlement study of an area to understand the influence of culture on architecture and preparation of necessary study reports, videos, power point presentations etc. of the same. Possibility of a vertical studio with 19AR03001 may be explored. (Maximum of 7 days duration)

Time bound project

Design detailing of any part of the Major project (E.g.: Canteen/ restaurant, operation theatre), calculation of service requirements and design of appropriate systems for the same (E.g. Water requirement for the building and design of storage tanks/vertical circulation and services). Design of basement parking and optimum usage of structural grid for parking and other utilities.

Reference:

- Francis D.K Ching “Building Construction” illustrated, John Willey & Sons,2008.
- Sam F. Miller, “Design Process: A Primer for Architectural and Interior Design”, VanNostrand Reinhold, 1995.
- Manual of water supply and treatment, Second edition, CPHEEO, Ministry of works and housing, New Delhi,1977
- AFEWise,JASwaffiedWater,“Sanitary&WasteServicesinbuildings”,VEdition,MitchellPublishing, Co. Ltd., 2002.
- Renewable energy, basics and technology, supplement volume on integrated energy systems, Auroville,1998.
- Elevators, Escalators, “Moving Walkways”, Manufactures catalogues, John Wiley,1967.
- National Building Code, Kerala Building Rules (KPBR/KMBR)
- “Time saver standards”, Callender Etal., Mc GrawHill

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	I (b)	19AR05002	Building Materials and Technology 5	1	3		4	100	100		200

Course Overview:

The subject primarily aims at developing understanding in use of appropriate construction technique and material in building design based on feasibility of technology, physical properties (like density & specific gravity, strength, thermal properties), aesthetic value, socio-cultural impacts and relevance, socio-economic factors, Ecological footprint etc.

The course introduces the technological aspects of a building design from the perspective of functional building component where use of natural and artificial materials is discussed based on their application. Each material would be taught in a manner such that its application would be discussed in a sequential manner, starting from foundation level, followed by plinth & others (sill, lintel, sunshades, window/door openings, walling material, as a floor & flooring) and culminating at roof and parapet wall. Construction technology and appropriate materials for structural systems, roofing, enveloping and interior finishes shall be considered under this subject from simple examples to complicated examples.

Course Outcomes:

Upon completion of the course, the student should:

- Understand about different systems in construction.
- Understand the possibilities available and developing modern trends in architecture.

Module 1: Composite Materials and Timber products in construction

Learning Strategies:

- Lectures on the syllabus content
- Case studies of material applications
- Market survey

Module Contents:

- Plastic based materials: Applications of Polycarbonates - poly urethane, epoxy flooring and tile/ stone joint filler, Polycarbonate panels for curtain walls.
- Engineered wood products & applications: Timber board – Veneers, Plywood, Block Boards, Particles, MDF, HDF, Mica Laminated boards, WPC, flush door applications
- Metal based applications – Aluminum Composite Paneling systems, Zinc cladding systems, weathering steel (COR-TEN Steel), for curtain wall or facade works, Gypsum board, cement fiber board, calcium silicate board, false ceiling systems with steel and aluminum framework systems, insulated / sandwiched panel or puff board for wall and roof applications.
- Paper, fibers and organic based materials – wall papers, leather tiles and cladding, paper structural systems,
- Recycled materials – Reducing carbon footprints using recycled or up cycled materials, Application of recycled or up cycled paper, metal, glass, cloth, plastics as construction materials for various components of a building – wall, roof, fenestrations, floor etc.

Module 2: Construction detailing

Learning Strategies:

- Lectures on the syllabus content
- Case studies of material applications
- Site visits to observe construction process
- Market survey

Module Contents:

- Floor finishing – Tiles, natural stone, vinyl, parquet, carpet finishes – laying process, substrates used, spacers, grout, thresholds, trims
- Wall finishing – Installation process of Dry and wet cladding, textured finish, wall papers, wall trims
- Ceiling finishing – types, components – process of grid system, gypsum, metal ceilings.
- Staircase details – rise and tread details with tiles, natural stone & vinyl finishes, Types of balusters and balustrades – fixing details of wooden, steel, aluminum & glass balustrades.
- Roof details – application of water proofing details, torch on membrane, flashing, expansion joint details, green roof details, insulation.

Module 3: Large span structures

Learning Strategies:

- Site visits and documentation of construction methods
- Market study of current trends and systems

Module Contents:

- Lattice truss –Its functional Requirements, Types of lattice trusses
- Steel portal frames, Long span steel portal frame and short span portal frame
- Folded plates and shell roof
- Types of shell roof, Advantages and disadvantages of shell roof
- Introduction to tensile structures, Type of membranes
- Cable structures, Pneumatic structures

List of drawings for Jury (Minimum 7 sheets)

- Gypsum board ceiling
- Column base plate and Gusseted Base plate
- Single bay symmetrical pitch lattice steel roof, two bay symmetrical pitch lattice steel roof.
- Single bay north light lattice steel roof on steel columns.
- Prismatic lattice steel roof.
- Tensile roof -connections
- Lightweight roofs.
- Light deflecting facade for offices.
- Reinforced concrete barrel vaults
- Presentation of collected materials from market survey and case study presentation for the jury.

Reference:

- Barry's advance construction of buildings –Stephen Emmit & Christopher A Gorse
- Helmut Koster, dynamic daylighting architecture.
- M.S. Shetty, 'Concrete Technology', S. Chand & Co. Ltd, New Delhi, 1986.
- S.C. Rangwala, 'Engineering Materials', Charotar Publishing House, India, 1997.
- P.C. Varghese, 'Building Materials', Prentice Hall of India Pvt Ltd, New Delhi, 2005.
- Don A. Watson, 'Construction Materials and Process', McGraw Hill Co., 1972.
- Jack M. Launders, 'Construction Materials and Methods', Careers, South Holland, Illinois, Wilcox Co. Ltd., 1986.
- Chudley, Construction Technology, ELBS, 1993
- Barry, Construction of Buildings, East West Press, 1999

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	I (c)	19AR05003	Professional Skill Enhancement 5			4	2	50	50		100

Course Overview:

This course intends to provide/ enhance the soft skills in order that students perform well in their academics and beyond. These skills are intended to support the student to perform better in her/his core subjects and also build up robust performance through hands-on workshops and laboratory training. This course is subdivided into two categories – Mandatory and Optional. Mandatory courses help in preparations for respective semester subjects. The optional category helps students to take personal initiatives to develop in specific areas that can widen their horizon of their understanding of architecture and also initiate action at the society level. There are also options to work on competitive exercises alongside other similar institutions.

Course Outcomes:

Upon completion of the course, the student should:

- be given an exposure of varied skills that can bring in confidence in handling their core subjects such as workshops, communication skills, computer application etc.
- be able to develop team spirit and interpersonal skills to manage complex situations.
- be able to cope with stress and develop multi-tasking capabilities.

Module 1: Building Information Modelling

Learning Strategies:

- Computer lab
- Group discussions and Interactive sessions

Module Contents:

- Concepts of modeling, understand computer modeling through various basic shapes and its composition
- To develop solid and surface models with architectural scale, proportion and elements
- To understand Camera, movement, shades and shadows, daylighting and lighting conditions, setting up a scene through modeling
- To edit and develop materials, surfaces and computer aided photo realistic rendering and understanding its adjustments
- Using pre-designed materials/maps from various sources 3-D Models
- To develop animation and photo realistic animations and short movies

Module 2: Presentation skills

Learning Strategies:

- Computer lab
- Group discussions and Interactive sessions

Module Contents:

- Composition and presentation through different vector based and page setting tools
- Combining photo editing modelling and rendering and presentation methods to produce photo realistic brochures and documents
- Development of concepts to real proposed scenarios through computer aided software

Module 3: Social Initiatives or any other co-curricular activities

Learning Strategies:

- Participations in symposiums and workshops

Module Contents:

- Optional content to be developed by each institution in order to help students to take part in activities that involve larger groups and facilitate peer learning.
- The activities could be student initiated societal activities or participation in NASA or similar student led group initiatives which has an academic content as well.

Reference:

- Cadfolks (2018). *AutoCAD 2019 for Beginners*. 1st ed. Kishore.
- Faulkner, A. and Chavez, C. (n.d.). *Adobe Photoshop CC Classroom in a Book 2019 release*.
- Omura, G. and Benton, B. (2018). *Mastering AutoCAD 2019 and AutoCAD LT 2019*. 1st ed. Sybex.

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	II	19AR05004	Human Settlement Planning	2			2	50		100	150

Course Overview:

To give an insight to the students on the evolution of settlements through various stages of human history. The course tries to lay a foundation for a general understanding of Human Settlements through analysing the fundamental elements that has moulded the very existence of human race made possible by a habitat. This course also aims to familiarize the students with evolution of cities and to give an over view of Planning concepts and process in Urban and Regional Planning.

Course Outcomes:

Upon completion of the course, the student should:

- Acquire a basic understanding of the spatial quality, the modifying factors and perception to express habitat as a basic element of human life.
- Understand the history, development and concepts of planning in India and abroad and its relevance and application along with an understanding of settlements.
- Familiarize the students with the process of evolution of cities, concepts related to humanitarian planning processes and skill development to identify planning issues in existing areas and develop solutions at basic levels.

Module 1: History and Theory of Planning**Learning Strategies:**

- Lecture notes, literature-based case examples through books, journal e-resource, documentaries
- Overview of Origin and evolution of Human settlements through introductory lecture.

Module Contents:

- Characteristics of Settlement planning in ancient, medieval, renaissance, industrial & postindustrial age.
- Characteristics of Settlement planning in India – Town planning in ancient, medieval, colonial and modern cities.
- Theories of Town planning – central place theory, concentric zone theory, sector theory, multiple nuclei theory
- Evolution of planning concepts: Garden cities, Radburn city, neighborhood concept, Planning concepts by LeCorbusier.
- Contributions to modern town planning thoughts by- Patric Geddes, Constantino A. Doxiadis, Lewis Mumford

Module 2: Concepts of Town planning**Learning Strategies:**

- Lecture notes, through books, journal e-resource, case studies, documentaries

Module Contents:

- Definition of town. Classification of Towns.
- Terminologies – Urban Outgrowth, Urban Agglomeration, Conurbation, Satellite Town, Suburb, Green belts, Peri urban development, Ribbon Development, Urban Rural continuum.
- Urban Planning process - survey techniques and data collection methods
- Different Types of plans- Structural plan, Perspective Plan, Development Plan, Annual Plan, Plan Schemes and Projects.
- Concept of master plan, its elements- Land use Plan

Module 3: Present Planning Scenario**Learning Strategies:**

- Lecture notes, through books, e-resource, case studies, analysis and documentaries

Module Contents:

- Need for town planning legislation. Town planning acts- Kerala Town Planning Act, 2016, Rehabilitation and Resettlement Act (LARR), Coastal Regulation Zones and its relevance, URDPFI Guidelines
- Town Planning Agencies - National, State & Local levels – NITI Ayog, Town Planning Authorities, Development Authorities, and ULB's. Role of these agencies in plan implementation
- Contemporary urban problems, growth and challenges.
- Need of sustainable city planning with illustrative case studies
- Modern Town Planning concepts – Transit Oriented Development (TOD), Smart cities.

Reference:

- Arthur B. Gallion, “UrbanPattern”,
- Keeble Lewis, Principles and Practice of Town Planning
- Kevin Lynch, Image of the city
- AEJ Morris, History of Urban Form
- C.L. Doxiadis, Ekistics: An Introduction to town and Country planning
- Peter Hall, Urban and Regional Planning
- Peter Hall & Ulrich Pfeiffer, Urban Future 21
- Ministry of Urban Affairs Govt. of India- Urban Development Plans Formulation and Implementation Guidelines
- John Ratcliffe Introduction to Town and Country Planning
- An Introduction to the Science of Human Settlements by C.L. Doxiadis; Ekistics Hutchinson, London, 1968.
- Housing and Urban Renewal by Andrew D. Thomas, George Allen and Unwin; Sydney, 1986.
- Ministry of Urban Affairs and Employment; Government of India, New Delhi, 1999
- Urban Development Plans: Formulation & Implementation; Guidelines, 1996.
- Sustainable Human Settlements by R. S. Sandhu; Asian Experience, Rawat publications, 2001.
- Living Plans: New concepts for advanced housing by P. Gastek; Birkhauser publications, 2005
- URDPFI Guidelines Vol I-2014 (<http://moud.gov.in/URDPFI>)
- URDPFI Guidelines II A-IIB-2014 (<http://moud.gov.in/URDPFI>)

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	II	19AR05005	Theory of Structures 5	2			2	50		100	150

Course Overview:

The course primarily aims at giving an overview of possibilities of Steel as structural material and its applications in Architectural design. It focuses on understanding various structural systems, designs and theory of steel members.

The course aims to impart knowledge & develop understanding about the structural behavior of various types of steel structural systems that are commonly employed in the building construction industry presently.

It also exposes the student to the methods that are used to design a steel structural system for a specific condition & loading. Interpretation of structural detail drawings in the site is also intended.

Course Outcomes:

Upon completion of the course, the student should:

- Get an introduction to the design concepts of Steel structures.
- Get confidence to correctly choose structural systems
- Be equipped to design simple steel structures.

Module 1: Introduction to steel, Connections, Design of tension member (tie)

Learning Strategies:

- Lectures on the below contents by presentation and discussion on Architectural projects to make students understand structures in the context of Architecture
- Lectures by using analogies and case study on failures to explain structural design concepts.

Module Contents:

- Introduction to Steel structures, common Steel structures, Types of Steel. Loading standards- I.S structural sections - I.S specifications – Design Philosophies- Limit state method. - Assumptions.
- Connections: Welded and bolted connections- Types and classification, Types of failure in connections.
- Design of bolted connections for members subjected to axial forces.
- Design of truss
- Design of tension member (tie) – plate, single angled member.
- Tension member splice (concept only)

Module 2: Design of beams**Learning Strategies:**

- Lectures on the below contents by presentation and discussion on Architectural projects to make students understand structures in the context of Architecture
- Lectures by using analogies and case study on failures to explain structural design concepts.

Module Contents:

- Beams- classification of cross section, plastic moment carrying capacity of a section.
- Design procedure, bending strength and shear strength of a laterally supported beam. Deflection limits, web buckling, web crippling,
- Design of built up beam.
- Design strength of laterally unsupported beam
- Effective length of lateral torsional buckling.

Module 3: Design of columns**Learning Strategies:**

- Lectures on the below contents by presentation and discussion on Architectural projects to make students understand structures in the context of Architecture
- Lectures by using analogies and case study on failures to explain structural design concepts

Module Contents:

- Compression members -- Short and Long columns –buckling class of cross section. Slendernessratio.
- Design of Strut-normal sections, single angledsection.
- Behaviour of different column sections under axial and eccentricloading
- Design of compression members, Built up columns -Design
- Laced and battend column (concept only)
- Column base -Slab base: - Design of slab base.
- Gusseted base, column splice. (concept only), Types of failure incolumn.

Reference:

- Bhavikatti, S. (n.d.). *Design of steel structures*. I.K. International Publishing housePvt.Ltd.
- Duggal, S. (n.d.). *Design of steel structures*. Tata McGraw-Hill.
- Pillai, S. and Menon, D. (n.d.). *Reinforced concretedesign*.
- Punima, B. (n.d.). *Design of steel structures*. Laxmipublications.
- Ramchandra (n.d.). *Design of steel structures Vol. I & II*. Delhi: Standard bookhouse.
- Relevant IS Codes. (IS 800-2007, IS 875, IS 805, IS 801, IS 811, IS 6533 Part 1, Part 2, Steel Tables). (n.d.).
- Subramanian, N. (n.d.). *Design of steel structures*. Oxford UniversityPress.

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	II	19AR05006	Building Services 2	2			2	50		100	150

Course Overview:

- Services are the lifeline systems of any built form making it functionally habitable. They also make them efficient, comfortable and safe. Building services essentially include fluid systems, electrical & energy systems, lighting systems, HVAC systems, security systemsetc.
- This course as the second of the 3 courses in Building services is intended to give the students an overview of the Electrical services, Firefighting and Illumination at various levels, their architectural considerations and their coordination with otherservices.
- This course is designed to enable students to understand various systems of Electrical services, Firefighting and Illumination, its design application for a small and largebuilding.

Course Outcomes:

Upon completion of the course, the student should:

- develop an understanding about the importance of services in buildings and its coordination in the builtenvironment.
- be able to critically understand various electrical, lighting and firefighting in our built environment.
- be able to choose from different systems available within each service component to suit any specific built environmentdesign.

Module 1: Electrical Services

Learning Strategies:

- Lectures on the history and relevance of Building services and broad overview of different systems.
- National and International study reports on the topic.
- Market survey on various products and services related to electrical services.
- Schematic electrical layout of small-scale buildings.(G+2)

Module Contents:

- Basic principles of electricity and macro level distribution; norms and standards
- Site level -High side electrical system - Transformers and switch gears – Layout of substations, Electrical distribution system at site level overview, Types of distribution networks at site level.
- Micro level-Planning electrical wiring for building – Main and distribution boards, Types of wires, wiring systems and conduit, Fixing of electrical fixtures and switches
- Electrical safety: Necessity of earthing, pipe and plate earthing, lightning protection in buildings.
- Materials, apparatus, joints, fixtures and breakers –Market survey

Module 2: Lighting**Learning Strategies:**

- Lectures on Illumination systems involved at domestic level and their design.
- Case studies to critically understand the different systems.
- Market survey to familiarize the fixtures and materials application.

Module Contents:

- Basic principles and definitions of Illumination: units of lighting, light in the electromagnetic spectrum, optical performance, color temperature, color rendering index, efficacy, Utilisation factor, Depreciation factor, LLF.
- Types of lamps and luminaires, Architectural lighting fixtures.
- Different types of lighting arrangements and distribution systems.
- Design consideration of good lighting scheme – Quantity, quality and energy - cost efficient systems. Basic design technique- determination of quantity: point by point method, lumen method. Calculating the layout (number and spacing) of light fixtures in a room using Lumen method.
- Determination of quality: visual comfort probability – Glare, types and methods to reduce glare.
- General illumination design: residential lighting, street lighting, industrial lighting, office lighting, departmental stores lighting, indoor stadium lighting, theater lighting, street lighting and lighting for displays.

Module 3: Fire Fighting System

Learning Strategies:

- Lectures on firefighting systems and their design.
- Case studies to critically understand the different systems.
- Market survey to familiarize the fixtures and materials application.

Module Contents:

- Causes and spread of fire, Combustibility of materials, safety norms, fire rating and assessment.
- Passive Fire Protection Strategies.
- Active Fire Protection Systems.
 - Fire Detection Systems.
 - Alarm Systems.
 - Fire Extinguishing Systems.
 - Smoke Control.
- Designing Fire Escapes for Life Safety.
- Code Provisions- occupancy, building heights & areas

Module 4: Sustainable aspects in Electrical & Lighting services**Learning Strategies:**

- Lectures on vertical transportation system and their design.
- Case studies to critically understand the different systems.

Module Contents:

- Alternative sources of energy including solar, bio based, wind, micro hydel sources and other innovations etc.
- Solar energy harvesting - types, components & design - on grid & off grid systems
- Energy efficient lighting practices - natural/passive lighting, lighting automation, devices and equipment.

Reference:

- Basic electrical engineering by D.P Kothari, I.J Nagrath
- Introduction to the design and analysis of building electrical system by John Mathew
- Electrical design guide for commercial buildings by William H. Clark
- Handbook of electrical design details by Neil Sclater
- Building construction illustrated by Dr. D.K. Ching
- Mechanical and electrical equipment for building by Walter T. Gondzik

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	I (c)	19AR05007	Interior Design & Detailing	1	2		3	75	75		150

Course Overview:

The subject primarily aims at familiarising the students with the planning, layout and design of interior spaces. The course deals with the creation and evolution of objects, structures and systems at human scale that aim to improve the quality of life in the immediate living and working environment, while looking at sustainable and innovative use of diverse materials and processes.

Course Outcomes:

Upon completion of the course, the student should:

- Be equipped with the theoretical, conceptual, creative and practical aspects of Interior Design along with its allied fields.
- Improve on their detailing skills and identify construction methods and techniques in interior design.
- Apply aspects from building services like lighting, electrical, plumbing.

Module 1: Principles of Interior Design

Learning Strategies:

- Lecture on the elements and principles of design with reference to Interior design.
- Documentation of existing site, office spaces/residences.
- Group discussion and case study analysis.

Module Contents:

- Development of interior design concepts- A historic review (History of interior design)
- Spatial analysis and theme analysis.
- Basic components of interior spaces
- A site visits.
- Group discussion and case study analysis.
- Design/Drawing Hours: The major project- Design a space of 100sq.m.-200sq.m which may be a retail space, work space or hospitality.

Module 2: Ergonomics and Anthropometry

Learning Strategies:

- To enable the students to understand the importance of ergonomics and anthropometry in architecture with the help of an introductory lecture, group exercises and sketches.

Module Contents:

- Principles of Ergonomics
- Anthropometry
- Furniture-Basics of furniture details

Module 3: Colour and Lighting

Learning Strategies:

- To enable students to learn the concepts of colour and lighting through case studies and site visits.

Module Contents:

- Concept of colour - significance of colour in the interiors and exteriors-Dimensions of colour
- Hue, value, intensity, Effects of Hue, value and Intensity.
- Application of colour harmonies in the interiors and exteriors –Effects of light on colour,
- Psychology of colour, effect of colour on each other.
- Importance of lighting – Lighting in interiors – importance, classification based on sources, uses,
- illumination, factors to be considered in lighting for different areas of house.
- Natural lighting and Artificial lighting-
- Types and uses of light, specific factors in lighting.
- Basic of Acoustics.

Design/Drawing Hours: Minor Project- A one day time problem of a room/space in the AD project maybe designed and detailed.

Module 4: Materials and Detailing**Learning Strategies:**

- To learn the different types of materials and to use them effectively and innovatively.
- Students will apply their learning from BMC and come up with good detailed drawings.
- Students will also apply their learning from building services classes and do the relevant service drawings.

Module Contents:

- Design/Drawing Hours: Working drawings of the major project and the relevant service drawings.
- Model making of major project/3d models/physical model.

Reference:

- Pile, John.F, “Interior Design”, Pearson; 4 editions(2007)
- Ching, Francis D.K., “Interior Design Illustrated”, John Wiley & Sons; 3 editions(2012)
- Panero, Julius and Zelnik, Martin, “Human Dimension and Interior Space: A Source Book of Design Reference Standards”, Watson-Guption; New edition(1979)
- DeChiara, Joseph, Panero, Julius and Zelnik, Martin “Time Saver’s Standards for Interior Design”, McGraw-Hill Professional(2001)
- Rengel, Roberto J, “The Interior Plan: Concepts and Exercises”, Bloomsbury Academic USA; 2nd Revised edition(2016)
- Mitton, Maureen, “Interior Design Visual Presentation: A Guide to Graphics, Models and Presentation Techniques”, John Wiley & Sons; 4 editions(2012)
- Pile, John.F, “A History of Interior Design Hardcover”, John Wiley & Sons Inc(2000)
- Kurtich, John & Eakin, Garret, “Interior Architecture”, John Wiley & Sons(1995)

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				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	II	19AR05008(A)	Elective Theory 2: Advanced landscaping	2			2	50	100	150	

Course Overview:

The course aims to provide the knowledge base regarding history of landscape architecture with the various theories that has guided the landscape design through the ages till present. It also introduces the criteria for selection, type and function of planting to be adopted in landscape design in detail. The course discusses about water as an element in landscape design and the different forms in which it is used in design. This course shall have a direct application in the design studio of the ongoing as well as subsequent semesters for site planning and landscape design.

Course Outcomes:

Upon completion of the course, the student should:

- Learn the History of landscape architecture from past till present
- Learn the Role of vegetation and planting design
- Use Water as an element of landscape and forms of usage in design

Module 1: History of landscape**Learning Strategies:**

- Presentation on landscape gardens
- Lectures on relevant topics

Module Contents:

- Significance of Time in Landscape Design Landscape Development in historical perspective, chronological evolution of landscape development; Ancient: Mesopotamia, Egypt, Greece, Rome
- Western: Europe, Italy, France, England
- Middle-east: Persian traditions, Eastern: China and Japan, Ancient and medieval period in India; Mughal and Rajput landscapes.
- Parks movement in America; Contribution of Ian Mcharg
- Contemporary works
- Cultural landscapes

Module 2: Planting design**Learning Strategies:**

- Lecture/ presentation on planting types
- Visit to botanical garden/nursery for familiarizing with plant species

Module Contents:

- Study of vegetation: trees, shrubs, ground cover, climbers; Physical characteristics and habit; Plant selection criteria - Functional, visual, ecological, economic and microclimatic aspects.

- Species used in dry and arid regions, coastal areas, shelter breaks controlling soil & wind erosion, and air pollution, noise pollution, etc.
- Species used for specific colour, season of flowering, size, mass planting, afforestation, focal point, barriers, edging, etc.
- Salt and drought resistant species, wetland species, fast growing, air quality improving species etc.
- Horticulture: planting and transplanting, planting techniques, techniques of propagation, cutting, pruning, grafting etc. Lawns, preparation and maintenance.
- Hydroponics, Bonsai, Indoor landscaping: Functions and behavior of indoor plants, light, air and water requirements, plant materials, Terrace gardens, vertical landscape etc.
- Conservation of flora and fauna- Botanical gardens, Arboretums, Sanctuaries, National parks, eco-reserves, etc.

Module 3: Water in landscape

Learning Strategies:

- Lecture/ presentations in relevant topics
- Site visits

Module Contents:

- Purpose of water in landscape, effects created by water-bodies, types: pools, freefall, flowing, cascade, spouts and jets
- Waterproofing, drainage and operation of designed water-bodies
- Natural pond habitat and design of ponds, supporting flora and fauna
- Swimming pools, reflecting pool etc.

Module 4:

Learning Strategies:

- Lectures and workshops

Module Contents:

- Environmental remediation through landscapedesign
- Revitalization
- Ground water Retention, Recharging, etc.

Reference:

- Appleton J., The Experience of Landscape, John Wiley & Sons, 1996.
- Bose, T.K. and Choudhary, K. Tropical Garden Plants in Colour. Horticulture and Allied Publishers. 1991.
- Charles W Harris. Nicholas.T. Stane, Timesaver Standards for Landscape Architecture: McGraw Hill Book Co. Inc. 1998
- Dee, C. Form and Fabric in Landscape Architecture: A visual introduction, UK: Spon Press. 2001.
- Gopalaswamiengar, K. S., Complete Gardening in India, 4/e, Gopalswamy Parthasarathy, 1991.
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Sem	Subject Group	Course Code	Subject	Hours/week			Credits	Marks			
				T	S	W/L		CA	University Exam		Total
									Jury	Written	
V	II	19AR05008(B)	Elective Theory 2: Behavioural Architecture	2			2	50		100	150

Course Overview:

- To impart knowledge about this relatively new field, born out of the synthesis between architecture and behavioral psychology.
- To expose the students to the importance of understanding people and their perception of environment in architectural design and planning
- To enable them to understand the various psychological aspects that can be incorporated in the design of built environment

Course Outcomes:

Upon completion of the course, the student should:

- Have an understanding of the multiplicity of living patterns, activities, geometric patterns in space and designing for the same.
- Get knowledge about the behavioral design process, techniques and design contexts.

Module 1: Introduction to Environmental Psychology and Behavioral Architecture

Learning Strategies:

- Lectures and group discussions
- Mapping of human behavior in varied environments through different exercises

Module Contents:

- Introduction to Environmental Psychology; Origin, principles and relevance of environmental psychology, its difference from other branches of psychology; Theories and approaches in environmental psychology.
- Relation between human psychology and design of built environment; Elements of design (point, line, shape, etc.), Principles of architecture (rhythm, balance, contrast, etc.) and its role in evoking emotions.
- Concept of perception; Visual perception; Theories on environmental perception, Environmental perception and design;
- Designing for pattern and activities,
- Archetypal activities/Archetypal spaces: planning of public spaces with reference to age groups and activities.
- Room use, geometry & meaning, hidden behavioral assumptions, adjacencies, vertical bypass & horizontal bypass, various stages in the design of building subsystems.
- Geometry of spaces, their meaning & connotations, Social organization of buildings, Behavioral assumptions in the planning of new towns and neighborhoods, borrowed space.

Module 2: Behavioral Design

V	II	19AR05008(C)	Elective Theory 2: Inclusive Design	2		2	50		100	150
Course Overview:										
<p>Inclusive design is an introduction to the concepts of accessibility and universal design with a particular focus on the implications of ability and dis-ability on usability of the built environment; spaces, buildings, infrastructure and interfaces. The student will learn how to apply this knowledge in architecture, landscape architecture, interior design and planning. The interdisciplinary collaboration with disability studies, rehabilitation studies and social science research will provide students with an opportunity to learn and develop wider understanding about the subject.</p>										
Course Outcomes:										
<p>Upon completion of the course, the student should:</p> <ul style="list-style-type: none"> • Define inclusive design with a particular focus on the implications of ability and dis-ability on usability of the built environment; spaces, buildings, infrastructure and interfaces. • Describe the standards, theories, legislation and principles of accessibility and universal design. • Critique interdisciplinary connect with disability studies, rehabilitation studies and social science research. • Distinguish between different concepts of accessibility and universal design. Review the condition of existing environment for universal access and suggest measures to address those. Apply this knowledge in architecture, landscape architecture, interior design and planning. 										
Module 1: Evolution of concepts of accessibility and universal design										
Learning Strategies:										
<ul style="list-style-type: none"> • Lectures, seminars and workshops 										
Module Contents:										
<ul style="list-style-type: none"> • Knowledge of human ability relevant to design problems at home, workplace, infrastructure and community environments. • An understanding of the evolution and limitations of Accessible Design • Differences between Accessible and Universal Design. • Understanding Principles of Universal Design that enable usability and inclusion across the spectrum of age, size, gender, ability and conditions, and contextual derivation of Universal Design Principles in India. • Understanding legislative framework for practice in India; Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995 and Amendments. • United Nations Convention for Rights of Persons with Disabilities (UNCRPD). 										
Module 2: Accessibility Standards										
Learning Strategies:										
<ul style="list-style-type: none"> • Lectures, seminars and workshops 										

Module Contents:

- Types of disability, Devices and Controls, Defining Architectural design requirements, Classification of Buildings and Accessprovisions.
- Design Elements within the buildings; Site planning, parking, approach to plinth levels, corridors, entrance and exit, windows, ramps, stairways, lifts, toilets, signage, guiding and warning systems, floor finishes andmaterials.
- Design Elements Outside the building; kerb at footpath, road crossing, public toilet, bus stop, telephone booth,signage.

Module 3: Accessibility Considerations**Learning Strategies:**

- Lectures, seminars andworkshops

Module Contents:

- Provisions in residential buildings, auditorium, parks, restaurants, railway stations etc. Best examples and case studies in Universal Designpractice.
- Access Audit; definition, purpose andmethod
- Retrofitting techniques for barrier freeenvironment.
- Hands-on practice in assessing needs and developing design solutions; a project based on field research and design to learn how to design for all individuals, regardless ofability.

Reference:

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