

SEMESTER VII

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
PT401	Practical Training	0-0-0-0	8	2016
Course Objectives <ul style="list-style-type: none">• To introduce students to the practical aspects of architectural practice and to acquaint himself/herself with various works and procedures of an architectural project from design to execution, which includes client discussions, obtaining building permit, preparation of working drawings and estimates, tendering process, explaining the drawings on site, coordinating the construction with contractors and workers, discussions with other consultants, completion procedure etc.• To help the student to obtain a variety of experiences in his/her 'Training office' including office management and administration, team work, site visits, preparing presentations, meeting deadlines, handling personal management issues, importance of soft skills, qualities like punctuality, professional ethics etc.• To enable the student to develop a sense of responsibility to use his/her own initiative in making the best use of the opportunities which he/she gets during training period and prepare himself/herself for the profession.				
a) Conditions of Eligibility <p>As per the B. Arch. Curriculum, students shall undergo one semester of practical training immediately after the completion of the 6th semester B.Arch. examinations. Only those students who have passed sixth semester Architectural Design Jury shall be eligible to undergo practical training. The duration of training shall be a minimum of 100 working days.</p>				
b) Selection of Firm for Practical Training <p>The training shall be under an architect registered with the COA, possessing an experience of minimum five years and approved by the Dept. of Architecture of the teaching institution.</p> <p>The candidate shall select the Architect / Architectural firm / Govt. organisation / Public sector undertaking for practical training with the approval of the Dept. of Architecture of the teaching institution, in advance before the commencement of the 6th semester University examination. The Architect under whom the practical training is done shall not be a regular / permanent faculty of the Dept. of Architecture of the teaching institution, or an immediate relative of the student.</p> <p>Students can also select internationally recognized Architects practicing outside India, with the approval of the Dept. Of Architecture of the teaching Institution.</p> <p>Any change in the firm in which the student does his/her practical training shall be done with due permission of the Department of Architecture of the teaching institution.</p>				

c) Type of works to be carried out during the training period

The students are expected to gain exposure in the following aspects:

- Involvement in the Design Process
- Site visit and Site Supervision
- Preparation of drawings for getting building permissions, working drawings, service drawings, etc.
- Preparation of estimates, specifications, contract documents, and tender documents
- Discussion with clients and other consultants

d) Joining Report, Monthly work report

The joining report should be sent to the Department of Architecture of the teaching institution, within ten days after joining the firm for practical training.

The format of the monthly work report shall be decided by the Dept. of Architecture of the teaching institution. Students are required to send copies of the monthly report of the work done as part of training, in the format prescribed. The monthly work report should reach the department within one week after the completion of each month. The report shall be duly signed by the Principal Architect or by the concerned Architect supervising the work.

e) Documents to be submitted after the completion of training

The students are required to submit to the Department of Architecture of the teaching institution,

- A report including the details of their work, illustrated with sketches, prints and other documents connected with the projects on which he/she has worked both in office and at site. This shall include:
 - A work diary
 - Original Joining report
 - Originals of monthly work reports
 - Certificates of completion of training, conduct and performance of work.

This report shall be certified by the registered Architect under whom the candidate had undergone practical training.

f) Evaluation of Practical Training

For the Practical Training, an evaluation shall be conducted at the end of the Seventh semester by a jury consisting of an internal and an external examiner appointed by the Teaching Institution.

Split up of marks for evaluations will be as per Group IV courses.

Only those who have completed the practical training successfully will be permitted to register for the eighth semester of the B. Arch Degree course. Those students who fail to obtain minimum 45% in the semester evaluation have to repeat the practical training.

Expected Outcome

By the end of the course the students are exposed to all aspects of architectural practice including functioning of the office, project conceptualisation and realisation as well as emerging trends in design, materials, technology and construction practices. The students should be able to deal with projects and more professionally.

SEMESTER VIII

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS402	Architectural Acoustics	2-1-0-0	3	2016
Course Objectives The objective of the course is to develop a basic understanding of the principles of architectural acoustics, the way we hear and perceive sound both indoors and outdoors, the appropriate criteria for listening environment and acoustical privacy, and the architectural decisions of layout and material selection in design.				
Syllabus Hearing and Perception-Behaviour of sound in enclosed spaces - Room Acoustics and Reverberation- Sound Absorption- Sound Transmission- acoustical materials- acoustical defects -Design Principles of Auditorium -Air borne & Structure Borne Noise- Planning against noise.				
Expected Outcome The students will <ol style="list-style-type: none">have a comprehensive knowledge of the concepts used in architectural acousticsbe able to identify, discuss and resolve acoustical problems related to architectural acoustics, and acoustic comfort.				
Reference Books <ul style="list-style-type: none">Cavanaugh, Hoboken, Architectural acoustics : Principles and practice,,: Wiley & sons, 2010.Design for Good Acoustics and Noise Control, Macmillan Education, 1988.Ducan Templation, Acoustics in the built environment, Oxford ; Boston : Architectural Press, 1997.J. Flynn, J. A. Kremers, A. W. Segil, G. Steffy, Architectural Interior Systems, Lighting, Acoustics, Air Conditioning, Van Nostrand Reinhold, 1992. .Kinsler and Fry, Hoboken, Fundamental of acoustics, NJ : Wiley, 2000Knudson and Harris, Acoustical Designing to Architecture, 'American Institute of Physics for the Acoustical Society of America, 1978M. D. Egan , Architectural Acoustics, Mc Grawhill Inc., 1988.M. D. Egan, Concepts in Architectural Acoustics, 1972.				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Introduction to Architectural acoustics The nature of sound - propagation of sound-velocity, frequency and wavelength of sound. Sound pressure - Sound intensity and loudness- Decibel and Phons- The human ear and hearing characteristics - Instruments and equipments	4	10%
II	Room Acoustics Behaviour of sound in enclosed spaces. Sound Absorption. Sound absorption coefficient, Sound absorbing materials, Porous materials, Panel materials, Resonators.Space absorbers - variable absorbers.	8	20%
FIRST INTERNAL TEST			
III	Concept of reverberation and reverberation time . Calculation of reverberation time - Sabine's formula .Acoustical defects in the enclosed spaces.	8	20%
IV	Effect of noise on human beings Noise sources - air borne and structure borne- Methods of preventing air borne and structure borne noises. Sound transmission - Noise criteria –NC curve - Transmission loss - permissible noise levels for different types of spaces.	8	20%
SECOND INTERNAL TEST			
V	Design Principles of Auditorium Different acoustical defects in auditoriums and their solutions, acoustical correction design and modification techniques.	7	15%
VI	Planning for noise control Reduction of noise by Town Planning and regional planning consideration - landscaping, campus planning and building design.	7	15%
END SEMESTER EXAM			

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
PE462	Industrial Architecture	3-0-0-0	3	2016
Course Objectives				
The basic objective is to impart knowledge on special considerations to be taken while designing industrial buildings and estates.				
Syllabus				
Introduction, Planning considerations for industrial parks, Design considerations for Industrial Buildings, Codes and standards, selection of structural systems, Work environments for industrial workers, Performance of buildings, Health and welfare of workers, safety and hazard mitigation				
Expected Outcome				
<ul style="list-style-type: none"> Ability to Plan and design industrial buildings ensuring functional efficiency and productive, safe and healthy work environments. 				
References				
<ul style="list-style-type: none"> IS 3483-1963 : Code of practice for noise reduction in industrial Buildings IS 6665-1972 : Code of practice for industrial Lighting IS 3103-1975 ; Code of practice for industrial ventilation Adam J., Hausmann K., and Juttner F., Industrial Buildings: A Design Manual Drury J. Factories _ Planning, Design and Modernisation National building Code Of India 				
Course Plan				
Module	Contents	Hours	Sem. Exam Marks	
I	Introduction to Industrial Architecture - History of industrial buildings, Codes , Standards and regulations, Planning considerations for industrial parks – Locating industrial parks, Site selection, site planning, Layout and patterns of industrial parks	5	10%	
II	Design considerations for Industrial Buildings – Flexibility, Adaptability, Functional Efficiency, Circulation and material handling, Systematic Plant Layout, fire safety.	8	20%	
FIRST INTERNAL TEST				
III	Structural systems Concrete and steel structures, Pre-engineered Buildings, Integration of structure and services, Materials and finishes for roofs, walls and floors.	8	20%	
IV	Working Environment for industrial workers Work space design, ergonomics, material and color selection, Illumination, Noise and vibration control, Natural ventilation, temperature and humidity, Visual environment and landscaping	9	25%	

V	Health and welfare Sanitation and rest facilities, Recreational Spaces, Safety and Security systems – Standard requirements for alarms, warning, hazard mitigation systems.	8	20%
SECOND INTERNAL TEST			
VI	Industrial visit and Building Documentation, preparation of report.	4	5%
END SEMESTER EXAM			

Course code	Course name	L-T-S-P/D	Credits	Year of Introduction
PE 464	BEHAVIOURAL AND ENVIRONMENTAL STUDIES IN ARCHITECTURE	3-0-0-0	3	2016
Course Objectives				
The course attempts to give an insight into the relationship between environment and behaviour and its relevance to architectural design. The student is exposed to the area of environmental and behavioural studies – its origins and evolution, its multi-disciplinary approach, research undertaken, and importantly its application in user-oriented design.				
Syllabus				
Environment and Behaviour, Responses to environment, Theories in Environment-Behaviour studies, Research methods, Environmental design – person- and activity-oriented				
Expected Outcomes				
By the end of the course, the student is expected to understand the integrated nature of environment and behaviour in architectural design to understand environment and behaviour theories in application and analysis in design to critically evaluate and undertake research in environment-behaviour studies to be capable of incorporating behavioural perspectives in design				
Reference Books				
<ol style="list-style-type: none"> 1. Canter, D. V., & Lee, T. (1974). Psychology and the built environment. Architectural Press. 2. Gifford, R. (2013). Environmental psychology: Principles and practices (5th ed.). Optimal Books. 3. Groat, L. N., & Wang, D. (2013). Architectural research methods. John Wiley & Sons. 4. Hall, E. T. (1966). The hidden dimension (Vol. 609). Garden City, NY: Doubleday. 5. Kopec, D. (2012). Environmental psychology for design (2nd ed.). New York, NY: Fairchild Books. 6. Lawson, B. (2007). Language of space. Routledge. 7. Rapoport, A. (1990). The meaning of the built environment: A nonverbal communication approach. University of Arizona Press. 8. Zeisel, J. (1984). Inquiry by design: Tools for environment-behaviour research (No. 5). CUP archive. 				

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Introduction Definition of terms: environment, behaviour, Environmental Behaviour Studies; Origins; Principles; Relevance; Scope; Focus areas Difference from other branches of psychology;	4	10%
II	Environment and Response Individual (environmental perception, spatial cognition, comfort, anthropometrics); Social (proxemics, territoriality, crowding, privacy); Environmental cues and behaviour; CPTED	6	10%
First Internal Test			
III	Theories in Environment-Behaviour Studies- need and purpose Brief introduction to influential theories: Behaviour setting; Stimulation theories - Arousal theory, Overload theory Under stimulation, Stress theory; Integral theories – Interactionism, Transactionalism, Organismic theories; Control theories - personal control, Boundary regulation, learned helplessness; Operant theory	8	20%
IV	Research methods Observation: Physical traces, Environmental Behaviour; Interview; Questionnaire; Archival research; Cognitive mapping, Activity mapping, Semantic differentials, Unobtrusive methods, visual methods; Examples of research	8	20%
Second Internal Test			
V	Environmental design – Designing for different age/abilities/gender Children, Youth, Women, Elderly, Persons with special needs; Gender and space	8	20%
VI	Environmental design – Designing for various built environments Residential, Learning, Healthcare, Workplace, Retail, Hospitality	8	20%
End Semester Exam			

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
PE466	Glass Technology in Architecture	3-0-0-0	3	2016

Course Objectives

1. To provide basic knowledge on Glass as a building material.
2. To provide an overview of modern concepts on role of Glass Envelopes.
3. To understand the role of Glass in Green design.
4. To provide design considerations for improving the building performance using Glass.

Syllabus

Evolution & importance of Glass in Modern Architecture- Manufacturing & properties of Glass - Applications of Glass in buildings - Need for Green Buildings - Different types of Glass - Glass for segments - Glass for Interiors and various applications -Glass & Human safety Compliances – Role of Glass in Fire Safety considerations - Design considerations of glazing systems

Expected Outcome

At the end of the course, the student will be able to:

- Understand the importance and role of Glass in Modern Architecture.
- Have an idea on the different types of glass and their applications.
- Be familiar with the Structural design of Glass and its fixtures.

Text Books:

- Hugh Dutton, Peter Rice, Structural Glass
- Joseph S, Amstock's Glass in Construction, McGraw Hill, 1997
- Mic Patterson , Structural Glass Facades and Enclosures
- Thomas Herzog, "Facade Construction Manual" Birkhauser, 2004
- William Allen, Envelope Design for Buildings

Reference Books:

- FOSG Architectural Guide
- Michael Wigginton, Glass in Architecture
- National Building Code of India 2016

Course Plan

Module	Contents	Hours	Sem Exam Marks
I	Evolution & importance of Glass in Modern Architecture- Manufacturing & properties of Glass. Applications of Glass in buildings (façade, interior applications) - Coating Technology: Importance & Necessity.	7	15%

II	Processing: Concepts on Tempering, Heat Strengthening, DGU, Laminates, Ceramic Fritting Different types of Glass: Mirror, Lacquered, Fire Resistant & Modern Glass with different applications.	7	15%
FIRST INTERNAL EXAM			
III	Glass & Human safety Compliances – Role of Glass in Fire Safety considerations : Class E, EI & EW Need for Green Buildings: Energy efficient buildings- Glass for segments – Hospitals, Green Homes, Airports, Offices & other buildings – Glass for Interiors and various applications Creative use, innovations and modern trends.	7	20%
IV	Benefits of going Green with glass– Factors of energy efficient material selection – performance parameters – Energy codes and Green ratings: ECBC, IGBC, GRIHA	7	20%
SECOND INTERNAL EXAM			
V	Introduction to National Building Code of India (Part -6) - Thickness analysis - Relationship between wind pressure and glass thickness - Design considerations of glazing systems	10	25%
VI	Industrial visit, documentation and preparation of report	4	5%
END SEMESTER EXAM			

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
PE468	SUSTAINABLE ARCHITECTURE	3-0- 0-0	3	2016

Course Objectives

The objectives of the course are

- To provide a holistic understanding about the concept of sustainability
- To understand the different aspects of sustainability with respect to architecture.

Syllabus

A brief introduction to the concept of sustainability. Environmental issues and their causes. Understand the impacts of urbanisation and climate change. Sustainable site planning, Low impact design. Water and waste management. Energy efficiency. Concept of embodied energy, operational energy, life cycle energy. Alternate energy production. Renewable energy- solar, wind, biomass, geothermal energy. Understand the green rating systems across the globe. GRIHA and IGBC rating systems.

Expected Outcome

Students will understand the concept of sustainability and its relevance in the field of architecture.

Students will be able to critically analyze the different aspects of sustainability and site planning before arriving at architectural solutions at any point of decision making.

Reference Books

- Ken Yeang, "Ecodesign : A manual for Ecological Design", Wiley Academy, 2006.
- Kevin Lynch, "Site planning", MIT Press, Cambridge, MA, 1984.
- Majumdar, M. ed., 2001. Energy-efficient buildings in India. The Energy and Resources Institute (TERI).
- N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.
- Sustainable Building Design Manual Vol 1 & 2, TERI, New Delhi.

Course Plan			
Module	Contents	Hours	Sem Exam Marks
I	Introduction to the concept and definition of sustainability. Stockholm declaration 1972; Brundtland report 1987; Earth summit 1992. Depletion of earth's resources & Carrying capacity.	5	10%
II	Environmental issues and Impacts- Pollution, Climate change, Urban Heat Island(UHI), Desertification, Coastal flooding, Water shortage, Imbalance in ecosystem, Food security.	5	10%
FIRST INTERNAL EXAM			

III	Sustainability in Site planning- Site inventory analysis. Understanding the site, Natural drainage and topography. Ecological footprint, Low impact design. Water and waste management. Rain water harvesting systems. Vernacular and sustainable ways of building through case studies.	10	25%
IV	Energy efficiency- Climate responsive design, Introduction to ECBC. Energy use in buildings - Concept of embodied energy; Operational energy; Life cycle energy. Material selection criteria. Renewable, non-renewable and Alternate energy.	10	25%
SECOND INTERNAL EXAM			
V	Concept of Green rating systems Introduction to various international rating systems for sustainability- EAM (UK), CASBEE (Japan), LEED (US), Green Star (Australia) etc. Understanding Indian Systems- GRIHA, IGBC	6	15%
VI	International Efforts towards Sustainable development - Introduction to UNEP, SDGs, COPs, UN-HABITAT, Local Agenda 21.	6	15%
END SEMESTER EXAM			

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
PE472	Architectural Conservation	3-0-0-0	3	2016
<p>Course Objectives The objectives of the course are</p> <p>(i) To Understand architectural conservation theory, its evolution and philosophy through learning history of the conservation movement.</p> <p>(ii) To analyze the intrinsic and extrinsic values of architectural heritage and impact of various interventions.</p> <p>(iii) To be aware of good and bad practices in architectural conservation scenario.</p>				
<p>Syllabus Understanding Heritage. Architectural Conservation - Definition, Need, Objectives and Scope Beginning of Conservation movement. Agencies involved and their role in conservation, International Charters World Heritage Sites, Selection criteria , Case Studies , Endangered heritage and sites Listing of heritage- Building Deterioration Guidelines for preservation, rehabilitation and adaptive re-use of historic structures- Case studies. Technique of Conservation - Interpretation and Presentation of Historic Sites.</p>				

Expected Outcome

Students are expected to be sensitized towards conserving our rich architectural heritage and to have an overview of understanding the theoretical aspects and practical implications of the profession.

Reference Books

1. Ashurst, J. and Dimes, F.G. Conservation of Building and Decorative Stone, Butterworth-Heinemann, London. -1990.
2. Asian Heritage Management - Contexts, Concerns, and Prospects, 1st Edition, Edited by Kapila D. Silva, Neel Kamal Chapagain, Routledge Contemporary Asia Series, Taylor & Francis Group New York, USA, 2013
3. Bernard M. Fielden- 'Conservation of Historic Buildings' -, Architectural Press, 2003
4. ICOMOS, Earthen Architecture: The conservation of brick and earth structures. A handbook.(1993)
5. Jukka Jokilehto, Butterworth - Heinemann – 'A History of Architectural Conservation' - ,1999
6. Poul Beckmann and Robert Bowles – 'Structural Aspects Of Building Conservation', Elsevier Butterworth-Heinemann, 2004
7. Repair and Maintenance of stone Practical Building Conservation Vol.1. to V by John Nicola Ashurst.
8. Seven Lamps of Architecture – John Ruskin

Course Plan

Module	Contents	Hours	Sem Exam Marks
I	Introduction to Architectural Conservation - Understanding Heritage. Types of Heritage Definitions: Cultural heritage, Natural heritage, Built heritage - Ancient Monument. Architectural Conservation - Definition, Need, Objectives and Scope, Ethics of conservation , Significance, values in conservation and Value Assessment.	6	15%
II	Beginning of Conservation movement in Europe- Contributions of John Ruskin & William Morris- Romantic and scientific conservation. Formation of SPAB. Authenticity & Integrity in Conservation practice. Agencies involved and their role in conservation - ICCROM, ICOMOS, UNESCO, ASI, State departments of Archaeology, Town Planning departments, State Art and Heritage Commission & INTACH.	6	15%
FIRST INTERNAL EXAM			

III	<p>Charters such as Athens charter for the Restoration of Historic Monuments (1931), International Charter for the Conservation and Restoration of Monuments and Sites (Venice Charter 1964), Historic Gardens (Florence Charter 1981), NARA charter (1994), ICOMOS Charter – Principles for the analysis, conservation and structural restoration of architectural heritage (2003)</p> <p>World Heritage Sites, Selection criteria , Case Studies , Endangered heritage and sites, Listing of heritage- documentation of historic structures- preparation of inventory - assessing architectural character and conservation values, grading etc.</p>	9	20%
IV	<p>Building Deterioration - Causes of decay in materials and structure –</p> <p>Climatic causes – Thermal movements, rain, frost, snow, moisture, wind.</p> <p>Botanical, biological and micro biological causes such as Animals, birds, insects, fungi, moulds, lichens.</p> <p>Natural disasters – Fire, earthquakes, flood, lightning.</p> <p>Manmade causes – Wars, pollution, vibration, vandalism and neglect</p> <p>Seven Degrees of intervention - Prevention of deterioration, Preservation, Consolidation, Restoration, Rehabilitation, Reproduction, Reconstruction.</p> <p>Guidelines for preservation, rehabilitation and adaptive re-use of historic structures- Case studies</p>	9	20%
SECOND INTENAL EXAM			
V	<p>Technique of Conservation - Preparatory procedures for conservation.</p> <p>Building material and structural conservation – timber, lime, stone and laterite.</p> <p>Preparation of Inventories, Initial inspections, Documentation - Research, Analysis and recording (Reports). Examples of Heritage building conservation.</p>	6	15%
VI	<p>Interpretation and Presentation of Historic Sites, and heritage tourism, Interpretation and Presentation of Historic Sites and heritage tourism, Asian Heritage Management Tools for spreading heritage awareness.</p>	6	15%
END SEMESTER EXAM			

Course No.	Course Name	L-T-S-P/D	Credits	Year of Introduction
PE474	Cost Effective Technology	3-0-0-0	3	2016
<p>Course Objectives</p> <ul style="list-style-type: none"> To develop an overall understanding of various principles and practices of cost effective building techniques. To study the quantification techniques to evaluate cost effectiveness and the role of proper planning and management in cost effectiveness. To understand the practical application of these techniques in building construction through case studies. 				
<p>Syllabus</p> <p>Review cost effective techniques used in past and their relevance in today's world and methods of quantifying cost effectiveness.</p> <p>Cost Effectiveness through planning and efficient construction management</p> <p>Significance of choice of materials and construction technology</p> <p>To review movements in cost effective construction-using appropriate case studies</p>				
<p>Expected Outcome</p> <p>Students will gain knowledge on various cost effective techniques and its practical application in buildings</p>				
<p>Text Books/References</p> <ol style="list-style-type: none"> Bansal, N.K, Havser, G.G. Minke, G, Passive Building Design Charles Correa, Housing and urbanisation. Dr. Misra and B. S Bhooshan, Habitat Asia G.C. Mathew , Low cost housing in development countries– Hand book of low cost housing K Thomas Poulouse, Innovative Approaches To Housing for the Poor Mohan Raj and Jai Singh, Advances in Building and Construction Publication of CBRI, SERC, RRL, NBO, COSTFORD etc Reading Material on Housing-Lectures Compiled by ITPI 				

Course plan			
Module	Contents	Hours	Sem Exam Marks
1	<p>Cost Effective techniques-Relevance in today's world-Mass housing, individual houses, public, commercial and institutional buildings-The inter relation of cost effectiveness and sustainability-Maintenance and longevity aspects-Cost effectiveness as a principle.</p> <p>Quantifying cost effectiveness (CBRI) - Percentage breakup of materials and labour, Percentage breakup of different elements of buildings, Percentage breakup of various items of materials, Percentage breakup of various types of labour.</p>	7	20%
2	Achieving cost effectiveness through planning and efficient construction management-simple, functional planning and detailing for different types of buildings- time factor, labour and transportation management, supervision, minimizing wastage and recycling materials.	7	20%
First internal Test			
3	Significance of choice of materials- indigenous materials-organic and inorganic materials- alternative materials- use of agricultural and industrial wastes-Pre Engineered Construction-Identify alternatives for Wall Construction-Ferro Cement and Ferro Concrete constructions-- Alternate roofing systems - Filler Slab - Composite Beam and Panel Roof -Pre-engineered and ready to use building elements - wood products - steel and plastic.	7	20%
4	Significance of construction technology – Traditional, innovative and alternative technologies- local adaptation of innovative technologies-Environment friendly and cost effective Building Technologies -Innovative Techniques developed by CBRI, SERC, BMTPC for foundation, superstructure, roofing, pre-fabricated construction techniques, advantage of pre-fabrication areas where pre-fabrication can be introduced, earth bag construction.	10	20%
Second internal Test			
5	Pioneers in cost effective construction- Architects like Laurie Baker, Charles Correa, Geoffrey Bawa, Moshe Safdie, Hassan	6	15%

	Fathy Research and developments of various agencies dealing with cost effective technology- CBRI- Auroville - Costford-Nirmitikendra-Habitat.		
6	Case study of a typical cost effective building (residences, offices, apartments, public buildings or institutions) considering various cost effective aspects - Critical analysis in terms of initial investment, maintenance cost and longevity of buildings.	5	5%
End semester examination			

Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS404	URBAN DESIGN	3-0-0-0	3	2016
Course Objectives				
<ul style="list-style-type: none"> To introduce the students to the relevance of urban design as a discipline interfaced between architecture and urban planning and introduce basic terminologies. To understand core urban design principles and theories, the concept of public realm and perception of spaces at multiple scales To create awareness among students to understand the buildings and the city as a text to be read and as the product of a complex, multilayered community based process. 				
Syllabus				
Brief understanding of urban design as a discipline and its evolution, its scope and objectives and the role of urban designer in contemporary city development. Overview of the evolution of urban form and morphology of traditional cities and its transformation. Introduction to basic theories in urban design and principles of urban spatial organization with reference to scale, massing, enclosure qualities and behavioral aspects. Basic understanding of urban design techniques and methods, interdisciplinary approaches, formulation of urban design strategies, policies and guidelines and project implementation methods.				
Expected Outcome				
The students should be made capable of appropriately using the language and terminology of urban design. They should gain the ability to understand, interpret and apply theories of urban design, and understand the complex and dynamic forces that are integral to the evolution of cities. The students should familiarize the range of methodological approaches for spatial analysis and acquire awareness for responsively designing the built environment with reference to the context.				

Reference Books

- Alexander, Christopher; Neis, Hajo; Anninou, Artemis; King, Ingrid F. A new theory of Urban Design, Oxford University Press, NY, 1987
- Bacon, Edmund N. Design of Cities, Viking Press, NY, 1967
- Carmona, M., Heath, T., Oc, T., and Tiesdell, S., Public Places Urban Spaces: The Dimensions of Urban Design, Oxford Architectural Press, 2010
- Correa, Charles The New Landscape: Urbanisation in the Third World, Guildford Angleterre: Butterworth Architecture, 1989
- Cullen, Gorden The Concise Townscape, Architectural Press, Princeton, 1961
- Hillier, Bill and Julienne, Hanson The Social Logic of Space, Cambridge University Press, UK, 2014
- Larice Michael and Macdonald, Elizabeth The Urban Design Reader, Routledge, NY 2013
- Lynch, Kevin Image of the City, Cambridge MIT Press, MA, 1960
- Moughtin, C., Cuesta, R., Sarris, C., and Signoretta, P., Urban Design: Methods and Techniques, Oxford Architectural Press, 2003
- Rossi, Aldo and Eisenman, Peter The Architecture of the City, Cambridge MIT Press, MA, 1982
- Sitte, Camillo The Art of Building Cities: City Building According to Artistic Fundamentals, Reinhold Publishing Corporation, 1945
- Spreiregen, Paul D. Urban Design, The Architecture of Towns and Cities, McGraw-Hill Publishers, NY, 1965
- Time Saver Standards, Urban Design, Tata McGraw Hill Education Private limited, New Delhi, 2011
- Trancik, Roger Finding lost Spaces: Theories of Urban Design, John Wiley & Sons, 1986
- Whyte, William Hollingsworth The Social Life of Small Urban Spaces, Project for Public Spaces, NY, 2001

Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Introduction to Urban Design Definition of urban design and its evolution as a discipline, relationship between architecture, urban design and urban planning, scope and objectives of urban design and relevance of urban design in the contemporary development scenario.	3	10%
II	Introduction to Urban form and cities morphology of historic urban spaces: Greek, Rome, Medieval towns, Renaissance place making, industrialization and	6	15%

	urbanization led transformation of urban spaces, concepts of new urbanism.		
FIRST INTERNAL EXAM			
III	Indian traditional cities and their urban form: temple towns, Mughal cities, colonial, modern and post-modern influences in the Indian urban context.	6	15%
IV	<p>Various dimensions of the urbanscape:</p> <p>Morphological dimension: land use, street networks, typology of buildings and plots, built form open space relationships and their patterns, urban scale, massing, enclosure qualities.</p> <p>Perceptual dimension: human perception of urban environment, symbolism in urban form, sense of place and placelessness, safety and security, territoriality, exclusion and inequity, place identity and image.</p> <p>Social dimension: society and space, culture and urban form, activity networks, concept of public realm, communities and neighborhood units, accessibility, inclusion in social spaces.</p> <p>Visual dimension: patterns and aesthetic order, kinaesthetic experiences, positive and negative spaces, hard and soft urban spaces, harmony and integration, townscape and imageability.</p> <p>Functional dimensions: streets and squares, public spaces, public private interface, movement networks, environmental resources and needs, land utilization, density, physical and social infrastructure.</p>	12	25%
SECOND INTERNAL EXAM			
V	Basic theories in urban space design and principles of urban spatial organization. (Kevin Lynch, Gordon Cullen, Christopher Alexander, Jane Jacobs, William Whyte, John Lang)	6	15%
VI	Urban design process based on case studies for understanding and interpreting urban issues in place making and identity, morphology, sprawl, generic form, incoherence, private and public realm, heritage conservation, effects of real estate, transportation and zoning. Urban survey methods and techniques, SWOT analysis, formulation of vision statement,	9	20%

aims and objectives, urban design interventions based on principles of scale, mass, linkages, skyline studies etc. structure plans, formulation of policies and guidelines for landscape, infrastructure, built form and project implementation methods in case examples.		
END SEMESTER EXAM		

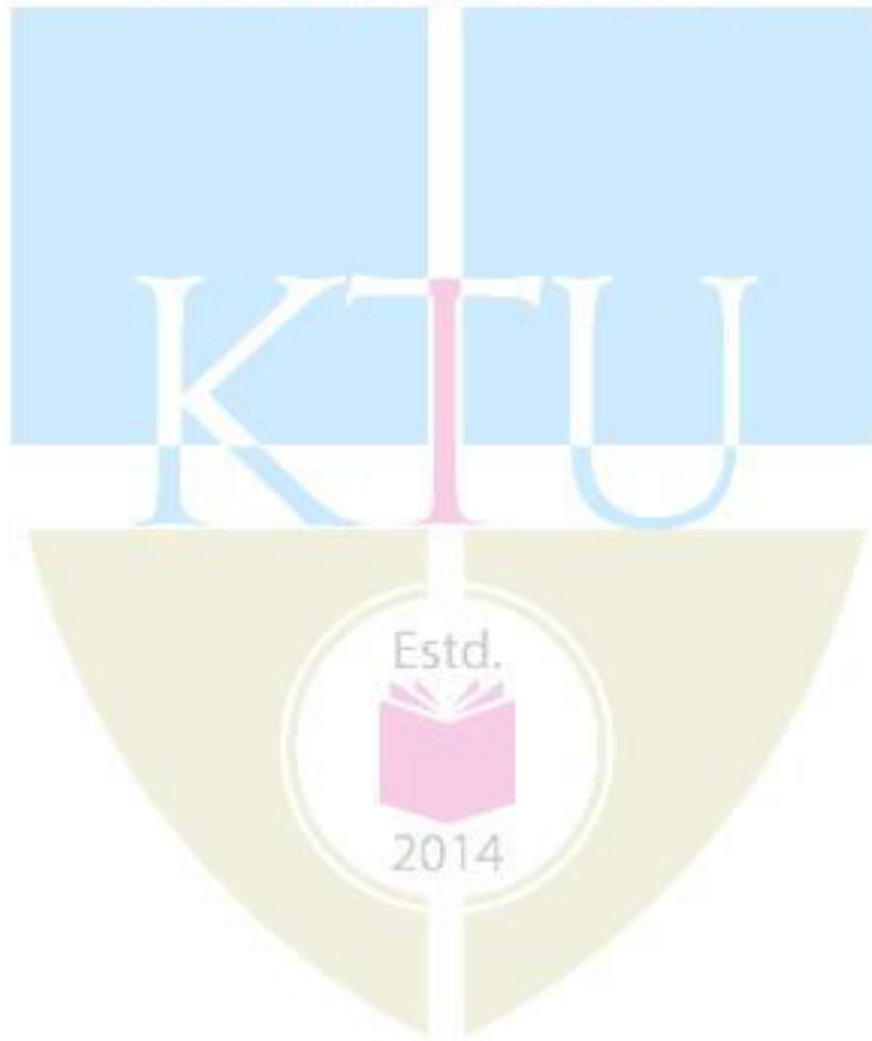
Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
ES402	ESTIMATION, SPECIFICATION AND BUDGETING	2-2-0-0	4	2016
Course Objectives				
<ul style="list-style-type: none"> To give an insight to the students about understanding of building economics. To enable the students to prepare detailed and approximate estimate and to have a clear picture of the project expenditure. To enable the students to have a thorough idea regarding the quality and quantity of materials, quantity and classes of skilled and unskilled labours and tools and plants required for the project. 				
Syllabus				
<p>Introduction to building estimation: basic terms, types of estimation, methods of calculating approximate estimation, methods of writing specification,</p> <p>Calculation of detailed estimation for a building.</p> <p>Introduction to valuation of properties.</p>				
Expected Outcome				
The student is expected to understand the various cost components of a building. He/ she will be able to do a detailed estimation of a simple building.				
Reference Books				
<ul style="list-style-type: none"> Chakrabarthy, Estimation, costing and specification in Civil Engineering, 1981 Dutta B N, Estimation and costing in Civil Engineering, UBSPD,1992 Mahajan S P, Civil Estimating and Costing, Sathyaprakasam,1988 References: 1. IS 1200(1968), Methods of measurement of building and civil engineering works Shah N A, Quantity surveying and specification in Civil Engineering,1981 				

COURSE PLAN			
Module	Contents	Hours	Sem Exam Marks
I	Need of cost estimation, components of an estimate: material cost, labour cost, equipment cost, work charge establishments, contractor's profit - attributes of a good estimation, types of estimate taken in different stages of a project, important terms- contingencies; work charged establishments, provisional sum, lump sum item.	6	15%
II	Factors affecting the cost estimation of a structure – building shape, height, enveloping area, structural elements, service finishes, architectural features-initial cost and maintenance cost. Introduction to building cost modelling	6	15%
FIRST INTERNAL TEST			
III	Introduction to approximate estimate methods-plinth area method, cubic rate method, unit rate method and bay method. Preparation of specification for materials of construction and items of work.	7	15%
IV	Quantity Surveying: Methods of building estimate-centre line method and long wall-short wall method. Preparation of detailed estimate for simple buildings of load bearing walls. Details of measurements and calculation of quantities & Abstract of estimate	10	20%
SECOND INTERNAL TEST			
V	Analysis of rates for main items of work in buildings based on PWD schedule of rates and standard data book	8	15%
VI	Introduction to valuation of real properties: Depreciation –methods of valuation - straight line method – constant percentage method –S.F method-rental method – profit based method depreciation -method sinking fund valuation of land –belting method-development method-hypothecated buildings scheme method	8	20%
END SEMESTER EXAM			

Course code	Course Name	L-T-S-P/D	CREDITS	Year of Introduction	
AS406	Architectural Design - VI	0-0-12-0	12	2016	
Course Objectives:					
The objective of the course is to introduce the campus planning principles through a comprehensive planning framework for the campus including its buildings, infrastructure, landscape, transportation network, microclimate etc.					
Syllabus:					
Campus planning – in terms of function, economy, aesthetic value and enhanced microclimate. The master plan should focus on architectural character, composition, typology of future buildings, groups of buildings and exterior spaces on campus.					
Course Outcomes:					
The students will be able to demonstrate their understanding of master plan development based on planning principles.					
References					
<ol style="list-style-type: none"> Jonathan Coulson, Paul Roberts, Isabelle Taylor: University Planning and Architecture: The Search for Perfection (2010) Mitchell WJ, 'Imagining MIT: Designing a campus for the 21st century', MIT Press, 2007 Richard P. Dober , Campus Architecture: Building in the Groves of Academe, 1996. Scott Van Dyke, Form, Line to Design, Publisher-Van Nostrand Reinhold, 1990 					
Course Plan					
Module	Contents	Hours	Sem Exam Marks		
I	Study/presentation of campus planning principles. Students may be assigned topics related to the same and make detailed reports and presentations.	12	15%		
II	Case studies on designed campus projects and analysis based on campus planning principles.	12	15%		
FIRST INTERNAL TEST					
III	Introduction to project- Case studies, Preparation of master plan focusing on architectural language, composition, functionality, groups of buildings and exterior spaces, services, typology of future buildings on campus.	90	40%		

	<i>Examples: Hospital, Educational institutions, sports facility buildings, housing projects, hotel and hospitality projects etc.</i>		
IV	Preparation of detailed architectural drawings and models	50	30%
SECOND INTERNAL TEST			
END SEMESTER EXAM			

APJ ABDUL KALAM
TECHNOLOGICAL
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Course code	Course Name	L-T-S-P/D	Credits	Year of Introduction
AS408	ARCHITECTURAL RESEARCH METHODOLOGY	2-0-0-0	2	2016
Course Objectives <ol style="list-style-type: none"> To orient the students towards research applications in Architecture by making them familiar with various research methods available. To introduce them to the basic concepts for identifying the research problem, help to review literature, analyse, interpretation of results and choose an appropriate methodology To develop an understanding of the ethical dimensions of conducting applied research. To develop techniques for writing reports 				
Syllabus <ul style="list-style-type: none"> • Introduction, Aims, Types of research • Research design-types • Research strategies • Research problem identification and formulation • Hypothesis formulation • Sources of Data and tools of Data collection • Analysis and synthesis • Research report writing 				
Expected Outcome <p>The students will be equipped with the knowledge in formulating the basic framework of research process, apply the research strategies to create a research outcome which further result in research report.</p>				
References <ol style="list-style-type: none"> 1. Dawson, Catherine, 2002, Practical Research Methods, New Delhi, UBS Publishers' Distributors 2. Groat L and Wang D, 2002, Architectural research methods, John Wiley & Sons Ltd 3. Knight A and Ruddock L, 2008, Advanced research methods in the built environment, Wiley Blackwell publishers 4. Kothari, C.R., 1985, Research Methodology- Methods and Techniques, New Delhi, Wiley Eastern Limited. 5. Kumar, Ranjit, 2005, Research Methodology-A Step-by-Step Guide for Beginners, (2nd.ed.), Singapore, Pearson Education. 6. Lucas R, 2016, Research methods for Architecture, Lawrence King Publishing. 7. Sanoff H, 2016, Visual research methods in design, New York, Routledge Publications 				

Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	<p>Introduction to Research</p> <p>Aims and Characteristics of research; Criteria of good research; Research paradigms; Basic types of research; Role of researcher; Ethics in research, Quality criteria</p> <p>Research in architecture</p> <p>Purpose and scope; History of Architectural research; Major areas of research</p>	4	15%
II	<p>Research Process – Identification of research problem, Literature review, Framing of research question/hypothesis, Research design; Data collection; Data analysis; Arriving at conclusions; Presentation of findings</p>	6	20%
FIRST INTERNAL EXAM			
III	<p>Architectural research strategies:</p> <p>Interpretative-Historical Research, Qualitative Research, Correlational Research, Experimental and Quasi-Experimental Research, Simulation and Modelling Research, Logical Argumentation, and Case Studies and Combined Strategies</p>	5	20%
IV	<p>Data collection</p> <p>Types of Data; Sources of data: Data collection methods; Sampling for data collection, Types of sampling</p> <p>Data analysis – Qualitative and Quantitative methods of analysis</p>	4	15%
V	<p>Research writing</p> <p>Preparation and structure of Research report, Research paper, Research proposal; Referencing style</p> <p>Peer reviewed journals; Impact factor;</p> <p>Plagiarism - types, anti-plagiarism software</p>	4	15%
SECOND INTERNAL EXAM			
VI	<p>Examples of architectural research</p> <p>Examples of seminal and recent research in architecture and related fields: Architecture, Landscape Architecture, Housing, Urban Planning, Urban Design, Environment-Behaviour Studies</p>	5	15%
END SEMESTER EXAM			