



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

School of Building and Environment

Department of Architecture

Courses with revised content and new courses introduced in 2022- 2023

CONTENTS

S. No.	Course Code	Course Name	Page No.
1	SAR1306 (Old)	Building services IV	6
2	SARA1502 (Revised)	Building services III	7
3	SAR1305 (Old)	Modern architecture	9
4	SARA1501 (Revised)	History, culture and built environment V	10
5	SAR1307 (Old)	Theories of Thinking	11
6	SARA1503 (Revised)	Theories of Thinking and design process	12
7	SARA2501(New)	Materials and construction studio IV	13
8	SARA9501(New)	Design studio V	15
9	SARA3504(New)	Environment and psychology	17
10	SARA8204(New)	Life cycle assessment of buildings	18
11	SARA8206(New)	Dynamics of organisational behaviour	19
12	SARA3501(New)	Biomimicry	21
13	SAR1405(Old)	Contemporary Directions in Architecture	25
14	SARA1601 (Revised)	Contemporary Directions in Architecture	26
15	SAR1302 (Old)	Building services III	27
16	SARA1602 (Revised)	Building services IV	28
17	SAR1609 (Old)	Energy efficient architecture	29
18	SARA1604 (Revised)	Energy efficient architecture	30
19	SAR1402 (Old)	Specification and estimation	32

20	SARA1603 (Revised)	Specification and estimation	33
21	SDE3601(New)	Commercial and retail interiors	34
22	SDE1801(New)	Business Management & Entrepreneurship	35
23	SARA2601(New)	Materials and construction studio V	36
24	SARA9601(New)	Design studio VI	38
25	SARA1602(New)	Building services IV	40
26	SARA8205(New)	Thermal comfort and passive design	42
27	SARA3702(New)	Architectural photography and journalism	43
28	SARA8207(New)	Tall Buildings	45
29	SAR1603(New)	Film Set And Temporary Structures Design	46
30	S102APROJ1(New)	Capstone project	47



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

School of Building and Environment

Department of Architecture

The Board of Studies meeting was held at the Department of Architecture on 13th May 2022 with the following agenda:

- 1) Welcome address and opening remarks on the proposal to introduce the new electives along with the content during the odd semester June 2022 to November 2022 for all the programmes offered at the Department of Architecture.
- 2) Discussion on the designs that need to be introduced in the odd semester during the academic year 2022-2023.

Minutes of the Meeting

- 1) Dr.Devyani Gangopadhyay presented the welcome address and briefed the agenda of the meeting.
- 2) Dr.Ebin Harrison presented the list of new electives that were identified for all the under graduate programmes - Architecture, Design and the post graduate programmes - Master in Architecture (Building Management and Sustainable Architecture) along with the content to the members.
- 3) Dr.Ebin Harrison briefed the design problems that were framed for both B.Arch and B.Des courses.
- 4) Ar.Saritha Varikkara suggested to focus the elective courses on skill development and sustainable practices. She was keen on looking into the content of the new elective titled 'biomimicry'.
- 5) With respect to M.Arch (BM), Ar.Ramesh Kumar presented the content of the elective courses such as 'Dynamics of organization behaviour', 'Strategic management' to the members.
- 6) Ar. Sarath C Kanth commented that the content of the title 'Dynamics of organization behaviour' is an appropriate course that can be included as a new elective during the odd semester.
- 7) Ar. Catherine presented the list of courses that have been identified as electives - 'Alternative materials and techniques' and 'Life cycle analysis' that can be offered during the forthcoming semester for students pursuing M.Arch (SA).
- 8) Ar.Anupama pointed out that as 'sustainable building materials and techniques' is offered in the semester I, the course titled 'Life cycle analysis' has the scope to be a new elective course.
- 9) Ar.Deepalakshmi presented the content and she gave a suggestion on incorporating sustainable issues in the interiors as well as how ideas can be driven from nature for indoor spaces.



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

- 10) Ar.Shantanu pointed out the need to nurture 'design thinking' in the studios.
- 11) Ar.Pramod Balakrishnan suggested the need to focus on the design process in each studio.
- 12) Ar.Meghal Arya discussed the stages in the design studio. She also pointed out that the design faculty must focus on adopting various stages based on the complexity and the comprehension of the students.
- 13) Dr.Devyani Gangopadhyay elaborated on the various stages such as the literature case study, site analysis, program, user analysis, ideation, evolving ideas three dimensionally with a thrust on the context, elevations and sections will be developed based on the skeleton models as well as the structural understanding.
- 14) Dr.Arulmalar discussed the logical sequence in framing the various design tasks in Basic design studio offered in both B.Arch and B.Des programmes. The tasks were planned sequentially and logically to kindle the students to move from linear to non linear thinking.
- 15) Dr.Ebin Horison also elaborated the design process adopting Hejduk puzzle to evolve ideas and forms three dimensionally right from the concept stage for the building typology 'Museum' that is planned to be introduced in semester V.
- 16) Ar.Pramod Balakrishnan pointed out that the museum can be planned in memory of an incident or a personality rather than for anthropology, science, paintings etc.
- 17) Ar.Meghal Arya pointed out that the design can be 'Memorial museum' and visit to such typology can be planned so that the students can understand 'symbolism'.
- 18) Ar.Sarath C Kanth and Ar. Pramod Balakrishnan insisted the need to document the design process unraveled by each student in the design studio which can help them to present their ideas during the intermediate as well as final reviews.
- 19) Ar.Meghal Arya suggested all the design faculty needs to explore how the knowledge constructed in various core as well as elective courses can be incorporated in design studio.

Prof. Devyani Gangopadhy concluded the meeting with acceptance that all the recommendations of the external members will be incorporated in the design studios that will be offered in the odd semester during the academic year 2022-2023. Ar. Shankar delivered the vote of thanks and felicitated the external members.

External members:

Ar. PRAMOD BALAKRISHNAN,
Chief Architect, Edifice, Chennai

Dr. MEGHAL ARYA,
Associate Professor,
Faculty of Architecture,
CEPT University, Ahmedabad

AR. SARITHA VARIKKARA,
Partner, Sarks Consultants, Chennai

AR. SHANTANU BHOWMICK,
Founder, Partner, Sybarite Studio,
Kolkata



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

AR. SARATH C KANTH,
Design Tech Architects, Chennai

AR. ANUPAMA MOHANRAM,
Co-Founder & Head – Architecture –
Green Evolution, Chennai.

Internal members:

Dr. Devyani Gangopadhyay

Dr. Ebin Horrison

Dr. Arulmalar R

Ar. Shankar. V

Ar. Ramesh Kumar

Ar. Ramkumar

Ar. Deepalakshmi

Ar. Surya Rajkumar

Ar. Catherine. S

Ar. Kavitha. S

SAR1306 (Old)	BUILDING SERVICES IV	L	T	P	Credits	Total Marks
		2	0	0	2	100

Course objectives:

1. To develop an understanding of the advanced building services such as Air conditioning and fire safety system for multi storey building.
2. To give an insight to the advanced service integration system and their applications in building.
3. To foster the ability to choose appropriate systems and integrate the same in their design projects.

UNIT 1 INTRODUCTION TO AIR CONDITIONING SYSTEMS**8 Hrs.**

Introduction to A/C conditions, basic of refrigeration systems, components of refrigeration system, compressor, condenser, control devices, evaporator, filters cooling tower. Vapour compression cycle. Concepts of cooling load, calculation of cooling load-conductivity, transmission heat load, internal heat gain, concepts of zoning, room air distribution-types of outlets

UNIT 2 AIR CONDITIONING SYSTEMS**6 Hrs.**

Types of window and split a/c. Package units, Factory made and split units, centralized plants and chilled water plants. Comparison of various systems-Space requirements for A/c units, AHU's & a/c plant, ducting, testing and maintenance on ducts and pipes.-**Designing the Built Environment and selecting the materials and elements for energy efficient Air Conditioning.** Protection of Ozone Layer.

UNIT 3 FIRE AND SERVICE CORES**10 Hrs.**

Introduction, fire triangle, methods of fighting fire, Classifying fire, **objectives of fire safety, Fire Hazards**, fire load, Fire resistance grading, Grading for buildings, fire safety decision tree, Protection for structural components-Fire fighting equipment - alarms, detectors, suppression systems, fire point ,hydrant & hoses – Fire fighting services-Site planning, Fire protection concepts in buildings, design of fire escape routes, design of egress, Requirements for fighting fire in high rise buildings - staircase enclosure, lifts & lifts enclosures, fire lift, basements, air conditioning, dampers. Service cores - Definition, design approach, functions of service core, service core types and placements-Service cores-toilets, elevator, electrical, air conditioning, staircases, exits & life safety considerations.

UNIT 4 SERVICE INTEGRATION**6 HRS.**

Integration of services - Water pump monitoring & control Electrical - power monitoring - fire alarm system –fire fighting system and monitoring - safety and security systems - FAS, PAS - access control system – fire fighter telephone system - CCTV surveillance system - Control of Computerized HVAC Systems - IBMS system and its components.

Max. 30 Hours**COURSE OUTCOMES****On completion of the course the student will be able to**

- CO1: Construct knowledge of the fundamentals of air- conditioning systems and applications in buildings.
 CO2: An understanding of fire safety, fire fighting and prevention systems in building according to building codes in context.
 CO3: Acquiring knowledge about fire fighting systems for a high rise building.
 CO4: Ability to select appropriate fire fighting systems and their installation.
 CO5: Understanding the fundamentals of service cores, its types and placement in a building.
 CO6: An insight to the incorporation of IBMS system within a building and inculcate the concepts into their design projects

TEXT / REFERENCE BOOKS

1. Thomas D. Eastop and William Edward Watson, Mechanical services for buildings, Longman scientific and technical publisher, 1992
2. Paul Lang, Principles of Air Conditioning, Delmar publisher, 1995
3. Arora C.P, Refrigeration and Air Conditioning, Tata McGraw Hill, 2000
4. Jain V.K., Fire safety in buildings, New Age International Pvt. Ltd. Publishers, 2010

 Deleted Content

SARA1502 (Revised)	BUILDING SERVICES-III	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To develop the understanding of the advanced building services such as Air conditioning, Electromechanical conveyance system, fire and safety.
- To comprehend the services through service core in the design of multi-storey buildings.
- To integrate the learning in the architectural design

UNIT 1 PRINCIPLES OF AIR CONDITIONING SYSTEMS**6 Hrs.**

Basic principles, laws and terminologies related to AC - refrigeration systems, components of refrigeration system: compressor, condenser, control devices, evaporator, filters, and cooling tower. Vapor compression cycle, Concepts of cooling load, calculation of cooling load-conductivity, transmission heat load, internal heat gain, concepts of zoning, room air distribution-types of outlets.

UNIT 2 AIR CONDITIONING SYSTEMS**8 Hrs.**

Window air conditioners, Package units, direct expansion air conditioning systems - Split units, centralized plants and chilled water plants, Comparison of various systems - Space requirements for A/c units, AHU's & a/c plant, ducting, testing and maintenance on ducts and pipes- Energy saving through design, operation and maintenance - Emerging technologies – VAV, VRV/VRF, Heat Recovery systems, etc., Protection of Ozone Layer-ecofriendly refrigerants. Selection criteria, design / structural considerations and energy requirements for above-mentioned air-conditioning systems – ECBC requirements.

UNIT 3 ELECTROMECHANICAL CONVEYANCE SYSTEMS**4 Hrs.**

Types of conveying systems: Elevators, Escalators, Travelators – Elevators: Types, Components, Design criteria, Traffic analysis, roundtrip time, Estimation of no. of lifts required for different building, typologies as prescribed by NBC – Escalators: Types, components, Design standards and specification from NBC – Travelators: Types, components, Range – Minimum and maximum distance to be covered, Design standards and specification as per NBC.

UNIT 4 FIRE SAFETY AND SERVICE CORE**8 Hrs.**

Introduction, fire triangle, Fire Hazards, Classification of fire, methods of firefighting, fireload, Fire resistance grading, Grading for buildings, fire safety decision tree, Protection for structural components-Firefighting equipment - alarms, detectors, suppression systems, fire point, hydrant & hoses –Fire fighting services-Site planning, Fire protection concepts in buildings, design of fire escape routes, design of egress, Requirements for fighting fire in high rise buildings, NBC planning consideration, staircase enclosure, lifts & lifts enclosures, fire lift, basements, air conditioning. Service cores - Definition, design approach, functions of service core, service core types and placements-Service cores-toilets, elevator, electrical, air conditioning, staircases, exits & life safety considerations.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Case studies/ Field visits and their critical appraisal through plates Discussion on various manufactures of Elevators & Escalators on their product categories and specification - Determining air conditioning load, identifying appropriate system developing layout, for their current design exercise - Coordination with other services, architectural and structural designs. Case studies and their critical appraisal - Application of fire and safety norms and regulations in their current design exercise. Space planning for air conditioning systems, conveyance systems, fire fighting and service core.

Max. 30 Hours**COURSE OUTCOME:****On completion of the course the student will be able to**

- CO1** Understand the fundamental principles of air conditioning systems and its operation in buildings.
- CO2** Develop comprehensive knowledge on various types of Air conditioning systems and expertise on selection of appropriate system for a specific building typology
- CO3** Develop comprehensive knowledge of architectural space planning for air conditioning systems.
- CO4** Understand design strategies involved in planning and sizing of electromechanical conveyance systems.
- CO5** Develop comprehensive knowledge on fire behavior, principles of firefighting, fire detection system, its integration with building and its importance in space planning.
- CO6** Develop comprehensive knowledge on service core design in multistoried buildings.

TEXT / REFERENCE BOOKS

1. Thomas D.Eastop and William Edward Watson, Mechanical services for buildings, Longman scientific and technical publisher, 1992
2. Paul Lang, Principles of Air Conditioning, Delmar publisher, 1995
3. Arora C.P, Refrigeration and Air Conditioning, Tata McGraw Hill, 2000
4. M.H.Lulla, Airconditioning for Architects, Chennai
5. Jain V.K., Fire safety in buildings, New Age International Pvt. Ltd. Publishers, 2010
6. Subramaniam K., Lift Technology- An Insight on Design Basics and its Evolution, EVB, 2010
7. William H.Severns and Julian R Fellows - Air conditioning and Refrigeration - JohnWiley and Sons, London - 1988
Andrew H Buchanan - Design for fire safety - John Wiley and Sons Ltd., New York.
8. Bureau of Indian standards - National building Code of India.
9. Energy Conservation Building Code user guide – ECBC, Bureau of Energy Efficiency, New Delhi, India.

SAR1305 (Old)	MODERN ARCHITECTURE	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

- To develop an insight into the architecture of Colonial India and the modern era.
- To impart knowledge on the various movements beginning from neo classicism to futurism in architecture.
- To explore the architectural language evolved and developed by various pioneers through well known examples.

UNIT 1 ARCHITECTURE IN COLONIAL INDIA

8 Hrs.

Colonialism and its impact, Early British Neo-classical Architecture, Indo-Saracenic Architecture and the works of Chisholm, Senate House- Chennai, Victoria Public hall -Chennai, Napier Museum- Trivandrum, Edwin Lutyens' Planning of New Delhi Showcasing Imperial power.

UNIT 2 EARLY MODERN ERA

6 Hrs.

Neo classicism- Chiswick House, Chateau de Versailles, Works of Boullee and Ledoux, Salt works of Chaux, Napoleonic Cemeteries, Bank of England, Impact of Industrialisation, Construction Materials and Technologies, Industrial Exhibitions, Crystal Palace, Eiffel Tower, Gallery des Machines, Chicago School, Public sector Architecture, Panoptic prisons and London Law Court.

UNIT 3 MODERN ERA

8 Hrs.

Arts and Crafts Movement - Art Nouveau and the works of Gaudi, Horta, Guimard, Macintosh, City Beautiful movement, Garden City movement, Skyscrapers, Bauhaus, CIAM, Cubism, Constructivism and its influence on Architecture, Adolf Loos and the Arguments on Ornamentation, Futurist Movement, Manifestos and the works of Sant'Elia Expressionism and the works of Mendelson, Taut, Polzeig, Destijl: Ideas and works, Utopian ideas of Paulo soleri.

UNIT 4 INSTITUTIONS, PHILOSOPHIES AND THE MASTERS

8 Hrs.

Modernism, F.L.Wright, Alvar Alto, Rockefeller center, Le Corbusier, Architecture of Prestige- Eero Saarinen, SOM, Minoru Yamasaki, Paul Rudolf, Oscar Neimeyer, Kenzo Tange, John Utzon, Sullivan, Mies van der rohe, Toyo Ito.

Max. 30 Hours

COURSE OUTCOMES

On completion of the course the student will be able to

CO1: Acquiring knowledge of Indo Saracenic architecture in Colonial India.

CO2: Ability to understand the ideologies and approaches of neo classicism, arts and crafts movement, art nouveau and industrial revolution.

CO3: Constructing an in depth information on futurism with examples.

CO4: Summarization of the role of different building materials and constructions techniques developed during the modern era.

CO5: Exploring the concepts and approaches adopted by the master architects with examples.

TEXT / REFERENCE BOOKS

1. Kenneth Frampton, Modern Architecture: A Critical History, Thames and Hudson, London, 1994
2. Leonardo Benevelo, History of Modern Architecture, Routledge and Kegan Paul, London, 1971
3. Manfred Taferi / Francesco dal co., Modern Architecture, Faber and Faber, Electa, 1980
4. Siegfried Gideon, Space, Time and Architecture: The Growth of a New Tradition, Harvard University Press, 1978
5. Thomas Metcalf, An Imperial Vision, Faber and Faber, London, 1989

Deleted Content

SARA1501 (Revised)	HISTORY, CULTURE AND BUILT ENVIRONMENT -V	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To explore the architectural marvels constructed during the modern era.
- To comprehend the philosophies of the master architects during the 19th century.
- To study in detail the different post-modern directions in architecture.

UNIT 1 EARLY MODERN ERA**6 Hrs.**

Neo classism-manifestation through works of Boullée and Ledoux, Salt works of Chaux, Napoleonic Cemeteries, Bank of England, Impact of Industrialization, Construction Materials and Technologies, Industrial Exhibitions, Crystal Palace, Eiffel Tower, Gallery des Machines, Chicago School-Louis Sullivan, Public sector Architecture, Panoptic prisons and London Law Court.

UNIT 2 MODERN ERA**8 Hrs.**

Artistic movement of the 20th century-Arts and Crafts Movement - Art Nouveau and the works of Gaudi, Horta, Guimard, Macintosh- Bauhaus-Walter Gropius -CIAM- Cubism- Constructivism and its influence on Architecture, Adolf Loos and the Arguments on Ornamentation- Expressionism and the works of Mendelson - Destijl: Ideas and works.

UNIT 3 INSTITUTIONS, PHILOSOPHIES AND THE MASTERS**8 Hrs.**

Emergence of modern-factors contributing to modern architecture - major architects and buildings of modern architecture through the Design philosophies - Organic Architecture- F.L. Wright: Programmatic Functionalism-Le Corbusier: Development of international style: Mies van der Rohe, Philip Johnson, Louis I Kahn, Eero Saarinen and SOM.

UNIT 4 CRITIQUING MODERNISM**4 Hrs.**

Brutalism - Archigram, Constructivism, Deconstructivism, Writings of Jane Jacobs - Kenneth Frampton, Robert Venturi - Christopher Alexander, Charles Jencks - Deconstructivism as new architectural movement -Ideas and works of Eisenmann, Hadid, Gehry, Libeskind and Tschumi.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Map the design philosophies and approaches of British architects in India. Sketches / models of exhibition buildings and the manifestations of art movement in buildings. Comparative studies of buildings constructed by master architects in the 19th century.

Max. 30 Hours**COURSE OUTCOME:****On completion of the course the student will be able to**

- CO1** Outline the planning principles and the construction techniques adopted during the indosaracenic era.
- CO2** Summarize the architectural exemplars during the Neo Classicism era.
- CO3** Outline the salient features and construction techniques adopted in the industrial exhibitions.
- CO4** Explain the manifestations of art movements in architecture.
- CO5** Discuss the philosophies of master architects with examples
- CO6** Explain the transition observed in exemplars of architecture during the modern era.

TEXT / REFERENCE BOOKS

1. Frampton, F. (1994). Modern Architecture: A Critical History, Thames and Hudson, London.
2. Benevelo, L. (1971). History of Modern Architecture, Routledge and Kegan Paul, London.
3. Gideon, S. (1978). Space, Time and Architecture: The Growth of a New Tradition, Harvard University Press,
4. Metcalf, T. (1989). An Imperial Vision, Faber and Faber, London.
5. Gideon, S. (1978). Space, Time and Architecture: The Growth of a New Tradition, Harvard University Press

SAR1307 (Old)	THEORIES OF THINKING	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

- To introduce 'design' as an integral feature of a larger context in the current scenario.
- To familiarize the young minds with the nature of design problems, methodology, creative techniques and the outcomes.
- To explore the various channels to creativity and the directions through which they are expressed in the built form and the environment.

UNIT 1 INTRODUCTION TO DESIGN

6 Hrs.

Definition of Design, Understanding of Design, Purpose and nature of good design, evaluation of design, types of Design, classification, role of designer, Context for Architectural design problems, design process, stages in the design processes, from different considerations - Broadbent, Christopher Alexander, Wade.

UNIT 2 DESIGN PROBLEMS AND DIRECTIONS

8 Hrs.

Context for the rise of the Design Methodology Movement, Different approaches in design, problem solving or intuitive, formulation of problems, nature of creative design problems, goals in design, different types of designs and the thrust given to the various solutions.

UNIT 3 DESIGN THINKING

8 Hrs.

Understanding the terms creativity, imagination etc. Theories on thinking, convergent & divergent thinking, lateral & vertical thinking, six hat thinking by Edward de Bono. Creative techniques like checklists, brainstorming etc, design puzzles & traps, blocks in creative thinking. Introduction to various theories in Architecture such as aesthetic theory, proxemic theory. Theory related to human behaviour and environmental design.

UNIT 4 CHANNELS TO CREATIVITY

8 Hrs.

Types of concepts, process of creativity, tangible and intangible channels to creativity in Architecture - the obscure, metaphors, transformation, paradox, precedents, nature, association with other arts, literal interpretation, materials, geometry, origami, literature and poetry etc. philosophies of famous architects.

Max. 30 Hours

COURSE OUTCOMES

On completion of the course the student will be able to

- CO1: Generalizing the spirit of the term 'design' in various contexts from multiple perspectives.
 CO2: Understanding the types of design problems, need to decode the brief to evolve 'problem driven outcomes'.
 CO3: Ability to compare and synthesize mapped design methodologies in various contexts.
 CO4: Critically analyze the different types of thinking and creative techniques in different domains.
 CO5: Acquiring knowledge to interpret the various channels to creativity and critically analyze the direction through which the ideas are translated in architectural domain.

TEXT / REFERENCE BOOK

1. Christopher Alexander, Pattern Language, Oxford University Press, 1977
2. Edward De Bono, Lateral Thinking: Creativity step by step, Harper & Row, 1970
3. Geoffrey Broadbent, Design in Architecture, Architecture & Human Sciences, John Wiley & sons, New York, 1973
4. James C. Synder and Anthony J. Catanese, Introduction to Architecture, McGraw Hill Inc., 1979
5. Anthony C. Antoniadis, Poetics of architecture: Theory of design, John Wiley & Sons, Newyork, 1982
6. Tom Heath, Method in Architecture, John Wiley & sons, Newyork, 1984

SARA1503 (Revised)	THEORIES OF THINKING AND DESIGN PROCESS	L	T	P	Credits	Total Marks
		2	1	0	3	100

COURSE OBJECTIVES:

- To introduce 'design' as an integral feature of a larger context in the current scenario.
- To give a deeper understanding of the nature of design problems, outcomes and techniques that enhances creative thinking.
- To explore the various channels to creativity and the philosophies of famous architects.

UNIT 1 INTRODUCTION TO DESIGN**10 Hrs.**

Definition of Design, Understanding of Design, Purpose and nature of good design, evaluation of design, types of Design classifications, role of a designer, Scale, process and production; Context for design problems, design process, stages in the design processes, from different considerations - Broadbent, Christopher Alexander, Wade.

UNIT 2 DESIGN PROBLEMS, PROCESSES AND OUTCOMES**10 Hrs.**

Context for the rise of the Design Methodology Movement, **Different approaches in design- synchronous and asynchronous approaches**, regression and escalation, participatory approach to design, design as process involving time and people, problem solving or intuitive, formulation of problems, nature of creative design problems, goals in design, different types of designs and the thrust given to the various solutions.

UNIT 3 DESIGN THINKING**10 Hrs.**

Understanding the terms creativity, imagination etc. types of creativity, Theories on thinking, convergent & divergent thinking, lateral & vertical thinking, six hats thinking by Edward de Bono. Creative techniques like checklists, brainstorming and types, **diagramming, mapping, zi-zo-zi, morphological analysis, SCAMPER, parametric exploration**, etc, design puzzles & traps, blocks in creative thinking. Introduction to various theories in Design such as aesthetic theory, proxemic theory. Theory related to human behaviour and environmental design.

UNIT 4 CHANNELS TO CREATIVITY**10 Hrs.**

Types of concepts, process of creativity, tangible and intangible channels to creativity in Architecture and Design - the obscure, metaphors, transformation, paradox, precedents, nature, association with other arts, literal interpretation, materials, geometry, origami, literature and poetry etc. Philosophies of famous Architects and **Designers**.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**5 Hrs.**

Literature studies of diverse design processes evolved by contemporary architects with a focus on both tangible and intangible channels to creativity.

Max. 45 Hours**COURSE OUTCOME:**

On completion of the course the student will be able to

- CO1 Apply the elements and principles of design in aesthetic and utilitarian art.
- CO2 Analyse the types of design problems to develop 'problem driven outcomes.
- CO3 Explore the various approaches to enhance thinking skills.
- CO4 Interrogate techniques to identify new directions in design thinking.
- CO5 Analyze the tangible and intangible approaches to creativity in architecture.
- CO6 Generate new channels to evolve ideas conceptually

TEXT / REFERENCE BOOKS

1. Alexander, C. (1977). Pattern Language, Oxford University Press
2. De Bono, E. (1970). Lateral Thinking: Creativity step by step, Harper & Row
3. Rendell, J. (2006). Art and architecture: a place between (pp. 1-240). London: IB Tauris..
4. James C. S. & Catanese, A.J. (1979). Introduction to Architecture, McGraw Hill Inc.
5. Antoniadou, A.C (1982)., Poetics of architecture: Theory of design, John Wiley & Sons, New York,
6. Heath, T. (1984). Method in Architecture, John Wiley & sons, New York.

SARA2501	MATERIALS AND CONSTRUCTION		L	T	P	Credits	Total Marks
	STUDIO IV		1	1	3	3	200
Continuous Assessment	End Semester Examination	Min Pass Marks					
150	50	Continuous Assessment	End Semester Examination				
		75	25				

COURSE OBJECTIVES:

- To comprehend the properties and the types of nonferrous materials.
- To synthesize the ways through which the nonferrous materials are used in fixed as well as movable barriers in the built form as well as the environment.
- To develop ways to adopt nonferrous materials in architectural design.
-

MODULE I GLASS AND PLASTICS FOR ARCHITECTURAL APPLICATIONS**35 Hrs.**

Classification of glass - Composition of glass, its properties and uses - Various types of glass e.g., plate glass, figured glass, float glass (toughened glass, laminated glass), tinted glass, reflective glass, wired glass, foam glass, glass block, fiberglass, float glass, obscured glass etc. - Decorative glass, insulated glass (sound, heat) - properties and application in building industry, glazing and energy conservation measures.

Thermal Insulation- Heat transfer and heat gain by materials -vapor barriers and rigid insulation. Blanket, poured and reflective insulation - properties and uses of (spun glass, foamed glass, vegetable fibers, mineral fibers, foamed plastics, and vermiculite and glass fibers)

Plastic: Properties, types and uses as building material - Polymerization, thermoplastics, thermosetting plastics, elastomers- Plastics in construction (polythene, polypropylene, polyvinyl chloride, PVC poly-structure, Polyethylene (Low density and high density), polycarbonate, acrylic flooring, PVC tiles, roof lights, domes, and handrails, curtain wall, jali work, applications of uPVC

MODULE II ALUMINIUM FOR ARCHITECTURAL APPLICATIONS**40 Hrs.**

Aluminium, windows and ventilators - Methods of construction - typical details showing fixing of framing members, glass panes, roller position (in case of sliding window), hinge arrangement (in casement window), locking arrangement and related hardware, thumb rules Cladding - Construction methods using Aluminum cladding (includes other ACP materials), shop front handrails - Structural Glazing, curtain walls.

Max. 75 Hours

Modules	Assignments	Outdoor / hands on	Construction plates	No.	Remarks
I	Collection of brochures for different types of glass	Report – student have to visit and study the applications of glass and plastics for architectural applications	Thermal insulation and expansion joints	1	Facilitates Architectural design VI
II	Collection of brochures for various aluminium sections and applications, Case studies for application of aluminum in buildings	Report – students have to visit and study aluminum installations in the interiors with respect to the thrust area and give a brief report with sketches and photographs.	Aluminium joinery	1	
			Aluminium door & windows	3	
			Partitions and false ceilings	1	
			Curtain wall and ACP	1	

	Sketches – fixing details, wall systems, doors and windows for uPVC, glass and plastics wall systems		Application of concrete in the outcome of Architectural design III / IV.	1	
--	--	--	--	---	--

COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Categorize the applications of nonferrous materials in buildings.
- CO2** Explain the various types of aluminium joinery in movable barriers in load bearing and non-load bearing
- CO3** Develop aluminium joinery for space dividers and false ceilings in the interiors.
- CO4** Explain the utilization of plastics and glass for appropriate applications in buildings.
- CO5** Devise ways to incorporate nonferrous materials in architectural design studios.

TEXT / REFERENCE BOOKS

1. Rangwala S.C. (1982). Engineering Materials, Anand Charotar Publishing House
2. Ahuja T. D and Birdie G.S., Fundamentals of Building Construction, Dhanpat Rai Publishing Company Pvt. Ltd., New Delhi, 1999
3. Punmia B.C, A Text book of Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 2004,
4. Boyne, Architects working details, Volumes I, II, III, IV, & V, The Architectural Press, London, 1959

SARA9501	DESIGN STUDIO V		L	T	P	Credits	Total Marks
			0	1	12	7	400
Continuous Assessment	End Semester Examination	Min Pass Marks					
		Continuous Assessment	End Semester Examination		Total		
250	150	125	75		200		

COURSE OBJECTIVES

- To expose the students on facilities to be provided to urban communities and train them to deal with the challenges posed in the design of multi-functional public buildings in an urban setting.
- To build upon the foundational design skills with more complex constraints and context. It integrates aspects of Architectural theory, Modern building technology, and Computation into the design process
- To understand and resolve the structural design and use of appropriate materials

METHODOLOGY PROPOSED

STAGE I

Studying the design aspects and parameters involved in medium rise buildings with focus on context, user analysis, bye laws and regulations. Analysis of various approaches and strategies to design problem solving using creative thinking techniques, theories related to human behavior and environmental design, climate responsive and barrier free environment principles.

STAGE II

Phase I

Conceptualize and develop novel solutions to built-environment by evolving innovative forms for the perceived Architectural program by using three-dimensional approach through study models, 3d sketches, digital models and exploration of computer aided drawings and presentation.

Phase II (Iteration and Ideation)

Resolving the given design program by experimentation and multiple iterations leading to three-dimensional composition by understanding the layers of space making.

Phase III

Communicate the final outcome through high standard graphical representations (legible Architectural drawings) along with integration of structures and materials

DESIGN INTEGRATION

Application of the knowledge gained from core courses like theories of thinking, climatic design in developing architectural solutions. Computational and presentation skills previously acquired may be incorporated.

TUTORIAL	PERSONAL BRANDING	6 Hrs.
Choosing factors to align based on Vision and mission- Social presence and development- Creativity, Critical thinking, Problem solving; Motivation, Persuasion, Negotiation.		

Max. 195 Hours

SUGGESTED TYPOLOGIES:

The focus is on creating complex-built form, connecting multiple spaces and users in a mid-rise built environment like Nursing Homes / Club house/ Museums/ Memorial Complex / Cultural Centre, etc.,

COURSE OUTCOME

On completion of the course the student will be able to

- CO1 Examine and infer from suitable literature and live case studies appropriate to the design typology.
- CO2 Proposition of precise understanding of the important local bye laws and Standards applicable to the specific typology.
- CO3 Developing an appropriate design intent based on notions, ideas with the three-dimensional perception

as part of the design process.

CO4 Apply the different techniques of creative thinking in design problem solving.

CO5 Curate a deeper understanding of the need for climate responsive design and universal design.

CO6 Integrate structural grid, parking, services and landscape in architectural design.

TEXT / REFERENCE BOOKS

1. De Chiara, J., & Crosbie, M. (2017). *Time-saver standards for building types* (4th ed.). McGraw-Hill Education.
2. Neufert, E. (2019). *Architects' data* (5th ed.). Wiley Blackwell.
3. Gauzin-Muller, D. (2002). *Sustainable architecture and urbanism*. Birkhauser Verlag AG.
4. Krishnan, A., Baker, N., Yannas, S., & Szokolay, S. (2017). *Climate responsive architecture: A Design Handbook for Energy Efficient Buildings* (1st ed.). McGraw Hill Education.
5. Degenhart, C., Heiss, O., Ebe, J., & Fran Ford. (2010). *Barrier-free Design: Principles, Planning, Examples*. Birkhauser.
6. Bassler, B. (2008). *Architectural graphic standards*. Hoboken, N.J.: John Wiley & Sons.
7. Ching, F. (2011). *Visual dictionary of architecture* (2nd ed.). John Wiley & Sons.

SARA3504	ENVIRONMENT AND PSYCHOLOGY	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To expose the relationship between man and his larger environment, with special emphasis on aspects that are likely to affect intervention in or creation of the built environment.
- To familiarize the students with basic concepts/ theories of psychology as relevant to architecture.
- To analyse the human dimension of environmental sustainability from psychological perspectives

UNIT 1 INTRODUCTION**8 Hrs.**

Introduction to the discipline environmental psychology, its importance in the field of architecture, understanding the principles of psychology, the roots and Edges of environmental psychology- Theories and approaches in Environmental Psychology. Emotional Relationships to Place: Attachment & Identity.

UNIT 2 BASIC ATTENTION PROCESSES AND MEMORY**7 Hrs.**

Models of Attention - Automization and Attention. The Use of Knowledge - Memory and built environment- theories on different types of memories - Retrieval from Long-Term Memory - Models of Semantic Memory - Basics of Visual Memory - Object Transformation in Visual Memory

UNIT 3 PERCEPTION**8 Hrs.**

Sensory Mechanisms and Concept of perception, Role of Culture in Perception - visual perception, theories on environmental perception- Gestalt Principles - environmental perception and design. Concepts of cognition. Environmental cognition and design. Environment and human response in relation to different environmental variables. Classical Theory of Decision Making and Prospect Theory of Decision Making

UNIT 4 SPACE AND HUMAN BEHAVIOR**7 Hrs.**

The Density/Crowding Distinction - Crowding and Density Human Experimental Studies –Physiological reactions – Task performance, Social-affective responses - Crowding in everyday settings – The residence - Recreational areas - Hospitals - Prisons. Concept of personal spaces, personal space and human behavior. Personal space and environmental design. Concept of territoriality, territoriality and human behavior & territoriality and environmental design. Residential environment- Concept of Home. Neighborhood concept & Neighborhood satisfaction. Place attachment theory, Workplace environment and behavior. Application of the knowledge in design of a residence, community neighborhood and other built environments.

UNIT 5 COMPREHENSIVE LEARNING

Documentation of Human Preferences in public spaces through various survey techniques.

Max.30 Hours**COURSE OUTCOME:**

On completion of the course the student will be able to

- CO1 Explore and understand various perspectives on human-environment interrelationships
- CO2 Relate the impact of space on human behaviour
- CO3 Develop clear knowledge on memory and attention
- CO4 Evaluate the role of perception and cognition in shaping human responses
- CO5 Build a systematic evaluation of the built environment in relationship to the act of socialising
- CO6 Apply the acquired knowledge through case evaluations.

TEXT / REFERENCE BOOKS

1. Morgan, T., & Clifford, Introduction to Psychology, Tata McGraw-Hill Publications, New York, 2001
2. Robert, G. (2002). Environmental Psychology: Principles and Practice, Optimal books, 2002.
3. Devlin, A. S. (2018). Environmental Psychology and Human Well-being: Effects of Built and Natural Settings. Academic Press.
4. Bell, P. A., Greene, T. C., Fisher, J. D., & Baum, A. (1996). *Environmental psychology*. Harcourt.
5. Mehrabian, A., & Russell, J. A. (1974). An approach to environmental psychology. the MIT Press.

SARA8204	NEW COURSE	T OF	L	T	P	Credits	Total Marks
			3	1	0	3	100

COURSE OBJECTIVES:

- To understand the importance Life Cycle Assessment
- To devise the applicability of LCA process and impact categories
- To comprehend the tools for LCA

UNIT 1 INTRODUCTION AND TERMINOLOGY**7 Hrs.**

History of LCA, Aspects of LCA, variants of LCA, Life cycle stages, end of life, Functional unit, System boundary, Life Cycle Inventory (LCI) data base, Life Cycle Management (LCM), Life Cycle Energy Analysis (LCEA), Carbon Accounting.

UNIT 2 LIFE CYCLE ASSESSMENT IN BUILDING INDUSTRY**12 Hrs.**

Material level, Product Level, Building level, Industry level, LCA and Design process, Pre-design, Schematic Design and Design Development Stage. CA process and impact categories: Inventory Analysis, Impact assessment, interpretation, Different impact categories like Global Warming Potential (GWP), Acidification Potential (AP), Eutrophication Potential (EP), Smog Formation Potential, Fossil fuel and Ozone Depletion Potential.

UNIT 3 DIFFERENT TOOLS FOR LCA**10 Hrs.**

Configuration of a tool, Classification of tools, Impact estimator and eco-calculator, Building for Economic and Environmental Sustainability (BEES), International LCA Tools, Related tools, Green footsteps & eco-friendly applications. Guidelines to integrate: LCA with design and evaluation, Different Scenarios of use of LCA, Sustainability targets, Selection of a LCA tools, LCIA.

UNIT 4 LIFE CYCLE COSTING (LCC) TOOL**10 Hrs.**

Component characteristics of an element group, input for energy Calculation, LCC calculations conduct of LCI and LCC calculations, Selective Assessment, Normalization and Weighing Factors LCA and LCC for different materials. Case studies- Two and Three variants of a house, office building, retrofitting buildings.

UNIT 5 COMPREHENSIVE LEARNING**6 Hrs.**

Calculating LCA for a particular building using One Click, calculating the LCI and LCC calculations for any identified building.

Max. 45 Hours**COURSE OUTCOME:**

- CO1** Understand the aspects of Life Cycle Analysis
- CO2** Understand the life cycle assessment in building industry
- CO3** Analyse the available use of LCA
- CO4** Categorise the various parameters in Life Cycle Assessment
- CO5** Acquire knowledge about tools for LCA tools
- CO6** Integrate the aspects learnt in the tools for LCA calculations

TEXT / REFERENCE BOOKS

1. A. Kanpur and T.E. Graedel: Industrial Ecology. Encyclopaedia of Energy, Volume 3, 2004
2. Environmental life cycle analysis by David Camborne, CRC-Press 1997
3. Life-cycle analysis of energy systems from methodology to applications, by Bent Sorensen, Published by Royal Society of Chemistry, June 2011
4. Lifecycle Assessment: Principles and Practice Chapter 1
5. R. A. Frisch and N. E. Gallipolis: Strategies for Manufacturing, Scientific American 261 (3), 144-152 1989

SARA8206	D	C	New Course	L BEHAVIOUR	L	T	P	Credits	Total Marks
					4	0	0	4	100

COURSE OBJECTIVES

- To understand the behaviour of human beings as individuals and groups
- To interpret individual and group dimensions in organizational behaviour
- To comprehend the dynamics of complex work situations.

UNIT 1 CONCEPT OF ORGANIZATIONAL BEHAVIOUR

9 Hrs.

Definition-Nature-Characteristics-importance of **organizational** behaviour- models, -Cognitive Framework-Behaviouristic Framework and Social Cognitive Framework of organizational behavior.

UNIT 2 INDIVIDUAL BEHAVIOUR

7 Hrs.

Perception- Concept- Nature- Process- Importance-Management and Behavioural Applications of Perception- Attitude- Concept- Process and Importance- Attitude Measurement - Attitudes and Workforce Diversity- Personality- Concept, Nature, Types and Theories of Personality Shaping-Personality Attitude and Job Satisfaction-Learning- Concept and Theories of Learning.

UNIT 3 GROUP BEHAVIOUR

8 Hrs.

Motivation - Theories of Motivation- Early and Contemporary views- Motivating a Diverse Workforce- Leadership- Styles - Traits -Theories of Leadership -Interpersonal Relationship- Group Dynamics - Stages of Group Development-Group Cohesiveness-Formal and Informal Groups- Group Processes and Decision Making-Dysfunctional Groups.

UNIT 4 ORGANISATIONAL DYNAMICS

12 Hrs.

Organisational Power and Politics -Concept - Sources of Power- Distinction between Power-Authority and Influence- Approaches to Power, Political Implications of Power-Dysfunctional Uses of Power - Knowledge Management - Emotional Intelligence in Contemporary Business Organisation-Conflict-Sources-Types-Functionality and Dysfunctionality of Conflict- Resolution of Conflict. Change-Concept-Nature- Resistance to change- Managing resistance to change- Implementing Change- Kurt Lewin Theory of Change-Grievance -Types -Process of Grievance Handling-Stress-Consequences-Causes of Stress- Managing Stress- Organisational Culture-Characteristics-Elements-Implications of Organisation culture, Process -Job Satisfaction- Components - Significance - Influencing Factors.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS

9 Hrs.

Case study presentation on topics revolving around organization behavior, dynamics need to be worked out..

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1 Understand the basic elements of human behaviour.
- CO2 Discuss individual and group behaviour
- CO3 Examine important aspects of group/team processes.
- CO4 Demonstrate ability to manage, lead and work with other people in the organization.
- CO5 Analyze the significance of conflict, politics and change in organizations
- CO6 Design effective organizational dynamics.

TEXT / REFERENCE BOOKS

1. Newstrom John W. Organizational Behaviour: Human Behaviour at Work, Tata McGraw Hill, 12th Edition, 2017.
2. Luthans Fred, Organizational Behaviour, Tata McGraw Hill, 12th Edition, 2017.
3. Sundar & Srinivasan, Elements of Organisational Behaviour, Vijay Nicole Imprints Pvt. Ltd., 2009.
4. Luthans Fred, Organizational Behavior, McGraw Hill Publishers Co. Ltd., New Delhi, 2006.
5. Aswathappa K., Organizational behavior, HPH, Bombay, 2006.
6. S.S. Khanka, Organizational Behavior, S. Chand & Co.,



New Course

SARA3501	BIOMIMICRY	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To explore, understand and recognize the relation between nature and human.
- To comprehend and appreciate the natural construction by the organisms in nature.
- To generate similar approaches from nature in the built forms.

UNIT1 INTRODUCTION**6 Hrs.**

Introduction- what is biomimicry - bionics - biomimetics - origins of biomimicry - Biomimicry vs biophilic -nature's laws, strategies, and principles - Nature as a model, measure and mentor, changing metaphor and approach organic architecture - animal architecture - complexity of natural organisms and systems - Relationship between nature and architecture.

UNIT2 BIOMIMICRY CONCEPTS**8 Hrs.**

Nostos Erda: Returning Home to Earth - Natural materials manufacture principles - Inorganic materials - crystallized version of Earth derived materials - Natural construction - adaptation for human use (mud-dauber wasp compass termites, Eastern tent caterpillars, female bauble spiders and the extraordinary Namibian fog-basking beetle, beaver dam construction).

UNIT3 BIOMIMICRY IN ARCHITECTURE**6Hrs.**

Biomimicry in architecture - overlap between biology and architecture - living building - biomimetics concepts - emerging biomimetics- technologies - nanotechnology in architecture - biomimetics products.

UNIT4 BIOMIMICRY AND SUSTAINABILITY**6Hrs.**

Examples of Buildings - works of Douglas Cardinal, Imre Makovecz, Daniel Liebermann, Eugene Tsui, Jacques Gillet, Petra Gruber - Biomimetic Cities-Biomimetic future Approach- Levels of Biomimicry (organisms level, behaviour level, ecosystem level) - Nature model - New applications of biological life into Architecture.

UNIT5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Assignment on the concepts of biomimicry by reviewing journal papers. Documenting the influence of Biomimicry in Architecture. Analysis of case studies of various architects- Ar. Michael Pawlyn, Ar. Mick Pearce, Ar. Santiago Calatrava.

Max. 30 Hours**COURSE OUTCOME:**

On completion of the course the student will be able to

- CO1** Understanding the origin and principles of biomimicry and able to distinguish its application in architecture
- CO2** Understanding the origin and principles of biomimicry and able to distinguish its application in architecture.
- CO3** Exploration and critical analysis of the principles, design approaches of biomimicry adopted in architecture.
- CO4** Ability to outline the technologies and design strategies by adopted by pioneers in the built form.
- CO5** Skill to interpret philosophies in a sustainable approach adopted by architects in different contexts.
- CO6** Constructing knowledge on the role of nature as a model, measure and mentor in architecture.

TEXT / REFERENCE BOOKS

1. Benyus, J. M. (2002). Biomimicry: Innovation Inspired by Nature. William Morrow.
2. Gruber, P. (2011). Biomimetics in Architecture: Architecture of Life and Buildings. Springer.
3. Hansell, M. (2005). Animal Architecture (Oxford Animal Biology Series). OUP Oxford.
4. Mazzoleni, I. (2013). Architecture Follows Nature-Biomimetic Principles for Innovative Design (Biomimetics). CRC Press.
5. Pawlyn, M. (2011). Biomimicry in Architecture. RIBA Publishing.



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

School of Building and Environment

Department of Architecture

Minutes of the Board of Studies meeting conducted on 15th December 2022

The Board of Studies meeting was held at the Department of Architecture on 15th December 2022 with the following agenda:

- 1) Welcome address and opening remarks on the proposal to introduce the new electives along with the content during the even semester January 2023 to May 2023 for all the programmes offered at the Department of Architecture.
- 2) Discussion on the designs that need to be introduced in the even semester during the academic year 2022-2023.

Minutes of the Meeting

- 1) Dr. Devyani Gangopadhyay presented the welcome address and briefed the agenda of the meeting.
- 2) Dr. Ebin Horrison presented the list of new electives that were identified for all the under graduate programmes - Architecture, Design and the post graduate programmes - Master in Architecture (Building Management and Sustainable Architecture) along with the content to the board members.
- 3) Dr. Devyani Gangopadhyay briefed the design problems that were framed for both B.Arch and B.Des courses.
- 4) Ar. Ramesh Kumar presented the content of the elective courses such as 'Design of tall buildings', 'Prefabricated Structures' were presented to the members for M.Arch (BM).
- 5) Ar. Sarath C.Kanth pointed out 'Design of tall buildings can be offered as an elective in M.Arch (BM) during the even semester.
- 6) Ar. Kavitha presented the list of courses that have been identified as electives 'Solar passive architecture' and 'Thermal comfort and passive design' that can be offered during the forthcoming even semester for students pursuing M.Arch (SA).
- 7) Ar. Anupama posited out that 'Thermal comfort and passive design' has the scope to be a new elective course that can be offered during the even semester in the academic year 2022-2023.
- 8) Ar. Deepalakshmi presented the content for the elective courses 'Architectural photography and journalism' and 'Parametric in interiors'
- 9) Ar.Saritha Varaikkara gave a suggestion that 'Parametric in interiors' is interesting but she was questioning about the abilities of the students to comprehend the content.



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

- 10) Ar. Deepalakshmi suggested that even though 'Interior photography' is offered in the previous semester, the course titled 'Architectural photography and journalism' will facilitate the students to develop skills holistically.
- 11) Ar. Shantanu pointed out the need to nurture 'design process' and innovative tools like story boards, mood boards, storytelling, Characterization of personas etc in the studios.
- 12) Ar. Pramod Balakrishnan suggested the need to focus on the need to facilitate innovative 'design process' in each studio so that the novices can explore their own thinking process.
- 13) Dr. Devyani Gangopadhyay elaborated on the various stages such as the literature case study, site analysis, program, user analysis, concept development, evolving ideas three dimensionally, ways to think to design elevations and sections with a thrust on the context, elevations and sections will be developed based on the skeleton models as well as the structural understanding.
- 14) Dr.Arulmalar discussed the logical sequence in framing the various design tasks in analysis of personal spaces and kiosks with a thrust on site planning, forma and interiors for both the programmes, B.Arch and B.Des programmes respectively.
- 15) Dr.Ebin Horrison also elaborated the design process incorporating anthropometric study in semester II. He also discussed the design brief 'public realm' for the students pursuing sixth semester.
- 16) Ar.Meghal Arya pointed out that the design can be 'convention centre' and visit to such typology can be planned so that the students can understand 'large span structures'.
- 17) Ar.Sarath C Kanth and Ar.Pramod Balakrishnan insisted the need to document the design process unraveled by each student critically in the design studio which can help them to present their ideas during the intermediate as well as final reviews.
- 18) Ar.Meghal Arya suggested all the design faculty needs to integrate the theory courses in design studios.

Prof.Devyani Gangopadhy concluded the meeting with acceptance that all the recommendations of the external members will be incorporated in the design studios that will be offered in the even semester during the academic year 2022-2023. Ar.Shankar delivered the vote of thanks and felicitated the external members.

The Board of Studies approved the proposed elective courses and the building typologies identified by the faculty members for the design studios offered during the even semester in the academic year 2022-2023.

External members:

Ar. PRAMOD BALAKRISHNAN,
Chief Architect, Edifice, Chennai

Dr. MEGHAL ARYA,
Associate Professor,
Faculty of Architecture,
CEPT University, Ahmedabad



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

AR. SARITHA VARIKKARA,
Partner, Sariks Consultants, Chennai

AR. SHANTANU BHOWMICK,
Founder, Partner, Sybarite Studio,
Kolkata

AR. SARATH C KANTH,
Design Tech Architects, Chennai

AR. ANUPAMA MOHANRAM,
Co-Founder & Head - Architecture -
Green Evolution, Chennai.

Internal members:

Dr. Devyani Gangopadhyay

Dr. Ebin Horrison

Dr. Arulmalar R

Ar. Shankar. V

Ar. Ramesh Kumar

Ar. Ramkumar

Ar. Deepalakshmi

Ar. Surya Rajkumar

Ar. Catherine. S

Ar. Kavitha. S

SAR1405 (Old)	CONTEMPORARY DIRECTIONS IN ARCHITECTURE	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

To introduce the various concepts / theories of architecture Modernism.

To construct knowledge on the fundamentals of design process & sustainable logics in architecture.

To familiarize the students with the works & ideology of master architects in India.

UNIT 1 CRITIQUING MODERNISM

6Hrs.

Brutalism - Archigram, Constructivism, Deconstructivism, Writings of Jane Jacobs - Kenneth Frampton, Robert Venturi - Christopher Alexander, Charles Jencks.

UNIT 2 WORKS OF THE MASTERS IN INDIA

7Hrs.

Chandigarh and Bhubaneshwar experiments - Le Corbusier, Koenigsberger, Louis Khan, Nari Gandhi, Baker, B.V.Doshi, Achyut Kanvinde, Charles Correa, Anant Raje, Uttam Jain, Joseph Allen Stein, Raj Rewal, Hasmukh Patel, Bimal Patel, Nimish patel, Karan Grover, Laurie Baker.

UNIT 3 CONTEMPORARY TRENDS IN INDIAN CONTEXT

7Hrs.

Works and ideas: CNT, Sen Kapadia, Gerard da Cunha, Mistry Architects, Sanjay Mohe, Rahul Mehrotra, Chitra Vishwanath, Yatin Pandya, Satprem Maini, Ashok B Lall, Aravind Krishnan, Dean d' Cruz, Mani Rastogi.

UNIT 4 SUSTAINABLE LOGICS AND DESIGN PROCESSES

10Hrs.

Post modernism - Cesar Pelli, Mario Botta, sustainable logics, Eco aesthetics- Meaning of fold, birth of blob- Frank Gehry, Santiago Calatrava, Zaha Hadid, Peter Eisenman, Greg Lynn, Eco cultural- Hassan Fathy - Geoffrey Bawa, Eco technical - Kenneth Yeang, Renzo-piano, Norman Foster, Eco centric- Shigeru Ban, Jeanne Gang, Michael Reynolds, Eco social - Ralph Erskine, Eco medical- Christopher Day.

Max. 30 Hours

COURSE OUTCOMES

On completion of the course the student will be able to

CO1: Understand the various critiquing of modernism.

CO2: Relate various theories & writing of the architecture around the world.

CO3: Criticize & appraise the works of the masters in India.

CO4: Interrelate various master planning experiments in India.

CO5: Interpret and analyze ways adopted the contemporary trends of Indian context by Indian contemporary architects.

CO6: To express importance of Post modernism, co aesthetics, Eco cultural, Eco centric in their design process.



Deleted Content

SARA1601 (Revised)	CONTEMPORARY DIRECTIONS IN ARCHITECTURE	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To introduce the diverse philosophies of masters in Indian context.
- To construct knowledge on the logics of sustainable architecture from diverse perspectives.
- To comprehend the approaches, strategies and the sensitivity of the Pritzker award winners.

UNIT 1 WORKS OF MASTERS IN INDIA**6 Hrs.**

Chandigarh and Bhubaneshwar experiments – Design philosophies and strategies - Laurie Baker, Joseph Allen Stein, Nari Gandhi, B.V. Doshi, Anant Raje, Achyut Kanvinde, Charles Correa, Raj Rewal

UNIT 2 LATE 19thCENTURY**12 Hrs.**

Vision and commitment of Pritzker award winners- consistent and significant contributions to humanity and the built environment through the art of architecture - I.M.Pei, Frank O Gehry, Tadao Ando, Renzo Piano, Richard Meier, Norman Foster

UNIT 2 EARLY 20thCENTURY**4 Hrs.**

Design philosophies, approaches and strategies adopted by Pritzker award winners in the early 20th century – Rem Koolhaas, Zaha Hadid, Toyo Ito, Shigeru Ban, B.V. Doshi, Arata Isozaki

UNIT 4 COMPETING LOGICS OF ARCHITECTURE**4 Hrs.**

Introduction to the competing logics of architecture – types of logics - Meaning of fold, birth of blob - low tech and high tech - self-sustaining buildings- buildings constructed through participatory processes – strategies adopted by eminent architects at the global level and in Indian context

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Case studies for the six competing logics of sustainable architecture, Philosophies and approaches adopted by the architects with examples. Identify the unique approaches adopted in designing the buildings.

Max. 30 Hours**COURSE OUTCOME:****On completion of the course the student will be able to**

- CO1** Understand various approaches and strategies adopted by architects in Indian context.
- CO2** Distinguish the logics of sustainable architecture.
- CO3** Appraise the concepts and approaches adopted to achieve the sustainable logics by eminent architects.
- CO4** Construe the common thread intertwined with the Pritzker award winners in the late 19th century
- CO5** Analyse and interpret the unique approaches and strategies adopted by Pritzker award winners in the early 20th century
- CO6** Develop abilities to incorporate unravelled philosophies, approaches and ideologies in architectural design.

TEXT / REFERENCE BOOKS

1. Peltason, R., & Yan, G. O. (Eds.). (2017). Architect: The Pritzker prize laureates in their own words. Black Dog & Leventhal.
2. Szalapaj, P. (2014). Contemporary architecture and the digital design process. Routledge.
3. Mückenheim, M., & Demel, J. (2012). Inspiration: contemporary design methods in architecture. BIS Publishers.
4. Turnbull, J. (2012). Toyo Ito: Forces of nature, Chronicle books
5. Schumacher, P. (2004). Digital Hadid. Springer Science & Business Media.
6. Ambasz, E., Ban, S., & Bell, E. (2001). Shigeru Ban. Princeton Architectural Press.
7. Findley, L. (2005). Building change: Architecture, politics and cultural agency. Psychology Press.
8. Bock, I. (2015). Six canonical projects by Rem Koolhaas. jovis Verlag.
9. Slavicek, L. C., & Pei, I. M. (2009). IM Pei. Infobase Publishing.
10. Van Gerreway, C. (2019). OMA/Rem Koolhaas: A Critical Reader from 'Delirious New York' to 'S, M, L, XL'. In OMA/Rem Koolhaas. Birkhäuser.

SAR1302 (Old)	BUILDING SERVICES III	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

- To understand the physics of sound, its characteristics & behavior both indoors and outdoors.
- To learn the principles of design with particular reference to acoustics in performing spaces.
- To explore the types of mechanical transportation systems and their usage in built environment along with the design parameters.

UNIT 1 INTRODUCTION

8 Hrs.

Characteristics of sound-reflection, transmission, diffraction, absorption coefficient, reverberation time, geometric acoustics, free field, octave band, Sabine's formula, reverberation time calculation - Sound Absorption - acoustic materials & the properties, variable sound absorbers, prefabricated sound absorbing panels, suspended sound absorbers.

UNIT 2 ACOUSTICS

6 Hrs.

Outdoor noise - built form, orientation, earth berms, sound shadow region-Indoor noise-measures to prevent sound transmission, leak, impact noise, false ceiling integrated systems & sound isolation

UNIT 3 DESIGN OF PERFORMING SPACES

8 Hrs.

Design of auditoriums: placing auditorium floors and balcony, stage house details, rear wall treatment, orchestra pit, acoustical defects, sound amplifying systems, Design of Concert halls, open air theatre and Broadcasting studios.

UNIT 4 ELEVATORS & ESCALATORS

8 Hrs.

Types of Lifts - Basic dimension, Traffic analysis, Roundtrip time, lift pit, machine room, types, lift operation, arrangement of lifts, quality & quantity of service - Escalators - basic dimension, Characteristics, arrangement and disposition-Conveyors and Walk ways.

Max. 30 Hours

COURSE OUTCOMES

On completion of the course the student will be able to

CO1: Knowledge on Science of Sound including different types of acoustic materials, their properties and design factors in the built environment based on the function.

CO2: Comprehend principles of acoustic design and its application in outdoor environment.

CO3: Art and Science of designing performing spaces and broadcasting studios with particular reference to acoustics

CO4: Methods to avoid sound transmission in interior spaces.

CO5: Judicial use of mechanical transportation devices in built environment.

CO6: Total understanding of design standards of diverse mechanical transportation systems like elevators and escalators.

TEXT / REFERENCE BOOKS

1. Siraskar K.A., Acoustics in Building Design, Orient Longman Ltd., 1972
2. Kandaswamy S., Architectural Acoustics and Noise Control, Allied publishers Pvt. Ltd., 2005
3. David Egan, Architectural Acoustics, J.Rose publishing classics, 2007
4. Marshall long, Architectural Acoustics, Elsevier academic press New York, 2006
5. William J. Cavanaugh, Gregory C. Tocci, Joseph A. Wilkes, Architectural Acoustics: principles and practice, Second edition, John Wiley & sons, 2009
6. Subramaniam K., Lift Technology- An Insight on Design Basics and its Evolution, EVB, 2010

SARA1602 (Revised)	BUILDING SERVICES-IV	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To understand the basic principles of physics of sound and enable them to apply the knowledge in various buildings.
- To make students realize the importance of acoustics and equip them with the knowledge for designing acoustically sound performing spaces.
- To make the students understand the design strategies and process in selecting the appropriate vertical transportation devices
- To explore the necessity of integrating the services and centralised control management

UNIT 1 INTRODUCTION TO SOUND**4 Hrs.**

Characteristics of sound – reflection, diffusion, transmission, diffraction, absorption - Human ear and hearing – Basic terminology: frequency, pitch, tone, timbre, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, sound masking, inverse square law – frequency range of audible sounds Types of noises, transmission of noises, acoustical comfort, Concept of Geometric acoustics

UNIT 2 ACOUSTICS**8 Hrs.**

Planning & Design against outdoor noise – for air traffic, road traffic and rail traffic – air borne noise & structure borne noise / impact noise – sound isolation – sound transmission class - Acoustic defects – reverberation time - Absorption coefficients of materials. Sound absorbing materials: porous materials, panels, membrane absorbers, space/functional absorbers & cavity / Helmholtz resonators ECBC requirements

UNIT 3 DESIGN OF PERFORMING SPACES**8 Hrs.**

Basic principles in design of auditorium, concert halls, open air theatre, Recording and Broadcasting studio. Sound systems – introduction – types – equipment's such as mics, speaker's etc. – standards – basic principles of sound system design. Exposure to acoustic design and simulation software.

UNIT 4 SECURITY SYSTEMS AND SERVICES INTEGRATION**6 Hrs.**

Safety and security systems, PAS - access control system - firefighter telephone system - CCTV surveillance system - Control of Computerized HVAC Systems -Integration of services - Water pump monitoring & control, Electrical - power monitoring - fire alarm system, firefighting system and monitoring - IBMS system and its components –ECBC requirements.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Assignments on solving acoustic problems – Sabine's formula. Case study and observation / analysis of Acoustical Spaces – Concert halls, recording studio, etc. - Discussion on acoustic materials available in market with catalogue and samples. Assignment-Working out individual service layout and arriving coordinated layout for IBMS - Case study on IBMS and critical analysis of the service integration - Applying the knowledge in their current design exercise.

Max. 30 Hours**COURSE OUTCOME:****On completion of the course the student will be able to**

- CO1** Understand the fundamental principles of acoustics and its importance in architectural design.
- CO2** Describe the different types of noise, their transmission and the measures to isolate / control them
- CO3** Analyze the various behavior of sound in indoor and outdoor space.
- CO4** Solve the acoustical design problems in a space by acoustic treatments.
- CO5** Design architectural spaces with respect to acoustic principles
- CO6** Understand the need of service integration and automated control

TEXT / REFERENCE BOOKS:

1. Siraskar K.A. (1972). Acoustics in Building Design, Orient Longman Ltd., 1972
2. Kandaswamy S., (2005), Architectural Acoustics and Noise Control, Allied publishers Pvt. Ltd., 2005
3. Egan, D. (2007). Architectural Acoustics, Rose publishing classics,
4. Marshall long, Architectural Acoustics, Elsevier academic press New York, 2006
5. Cavanaugh, W.J., Tocci, G.C., Wilkes, (2009). J.A Architectural Acoustics: Principles and practice, 2nd edition, John Wiley & sons,

SAR 1609 (Old)	ENERGY EFFICIENT ARCHITECTURE	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

To enable the students understand the importance of energy efficiency in the built environment through the basic energy efficiency principles, building materials, technologies and policies.

To understand role of embodied energy in achieving efficiency.

To comprehend the overall structure of green rating systems.

UNIT 1 ENERGY EFFICIENCY IN BUILDINGS

6 Hrs.

Introduction and need for energy efficiency - Historic buildings, preindustrial, post-industrial, and modern architecture - Basic Principles - land form, vegetation type, and pattern, water bodies, open spaces, and built form, colour, texture, openings, and design strategies - passive techniques.

UNIT 2 SUSTAINABILITY AND MATERIALS

8 Hrs.

Various building materials and techniques used for energy efficiency. Building materials role in improving energy efficiency. Embodied energy of materials - Reduce, reuse, and recycling of materials - "e" labelling of materials like energy star etc.

UNIT 3 TECHNOLOGIES FOR ENERGY EFFICIENT BUILDINGS

8 Hrs.

Renewable energy systems. - Solar active, thermal and photovoltaic systems, wind, tidal, biomass, biogas, Ventilation and day lighting techniques - cross ventilation, stack effect, courtyard effect and shading principles, HVAC technologies, building automation system.

UNIT 4 ENERGY POLICY AND BUILDING ENERGY STANDARDS

8 Hrs.

Green buildings - before and after rating systems - LEED, BREEAM, BEPAC, LEED INDIA etc - Concepts of green buildings - sustainable site, water efficiency, materials and resources, energy and atmosphere, indoor environmental quality, and innovation in design- case studies and examples.

Max. 30 Hours

COURSE OUTCOMES

On completion of the course the student will be able to

CO1: Understanding Energy Efficiency practiced from the history till the current scenario

CO2: Interpreting the role of building materials in Energy Efficiency

CO3: Exploring the concept of Reduce, Reuse and Recycling of Materials.

CO4: Application of the renewable resources in Energy Efficiency

CO5: Integration of passive and active techniques in the creation of Energy Efficient Architecture

CO6: Inferring the role played by green rating systems in the creation of energy efficient structures.

TEXT / REFERENCE BOOKS

Walter F. Wagner, Energy Efficient Building, MGH Publisher, 1980

Majumdar M., TERI Publications, Energy Efficient buildings in India, 2001

Gupta V., Energy and habitat, John Wiley & Sons, 1984

LEED GREEN BUILDING Rating System version 2.1, June 2001

Chaman L. Gupta, Renewable Energy - Basics and Technology, Auroville Foundation, 1998

SARA1604 (Revised)	ENERGY EFFICIENT ARCHITECTURE	L	T	P	Credits	Total Marks
		2	0	0	3	100

COURSE OBJECTIVES:

To impart knowledge on the issues related to environment.

To understand the strategies and codes related to energy efficient and climate responsive buildings.

To gain knowledge on different parameters and design strategies involved in the design of building components

To realise the concepts of energy efficiency and green building rating systems for new construction and existing buildings.

UNIT 1 INTRODUCTION**6 Hrs.**

Introduction and need for energy efficiency – Overview of energy efficiency in Vernacular buildings - Energy conservation through site planning, design and development - relationship between open spaces and built form - land form, vegetation type and pattern, water bodies; Integration of building and site - passive strategies in built environment. Renewable energy system - Solar active, thermal and photovoltaic systems, wind, tidal, biomass, biogas.

UNIT 2 ENERGY EFFICIENT TECHNIQUES AND TECHNOLOGIES**10 Hrs.**

Factors that affect energy use in buildings - functional factors, environmental factors, envelope factors, air-conditioning systems factors, energy source factors and electrical systems factors. Building management systems – Access control, artificial lighting.

UNIT 3 DESIGN OF BUILDING ENVELOPE**12 Hrs.**

Thermal quantities - heat flow rate, conductivity (k-value) & resistivity - conductance through a multi-layered body, surface conductance - transmittance - calculation of U-value - convection, radiation, concept of sol-air temperature & solar gain factor - introduction to periodic heat flow in building, time lag & decrement factor. Glazing types, properties, glass layers, external and internal shading devices. Building envelope design determinants: indoor temperatures, thermal comfort, and sensible cooling/heating demand.

UNIT 4 SUSTAINABLE PRACTICES AND RATING SYSTEMS**12 Hrs.**

Various building materials and techniques used for energy efficiency. Role of Building materials in improving energy efficiency. Life Cycle Analysis, Embodied energy of materials - Reduce, reuse, and recycling of materials - "e" labelling of materials like energy star etc. Overview of Energy Conservation Building Code (ECBC) - Concepts of green buildings - sustainable site, water efficiency, materials and resources, energy and atmosphere, indoor environmental quality, and innovation in design- case studies and examples. – Green Building Rating System- BREEAM, LEED, IGBC, GRIHA. Energy Audit of Buildings

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**5 Hrs.**

Comparative analysis of thermal properties of building materials to enhance practical knowledge in achieving energy efficiency in buildings. Case studies presentation by students on the energy efficient techniques and technologies adopted in buildings. Deriving design strategies for day lighting and ventilation from ECBC guidelines and finding out lighting levels and air movement through simulation analysis - e-quest, IES-VE, etc

Max.45 Hours**COURSE OUTCOME:**

On completion of the course the student will be able to

- CO1 Illustrate with examples of different environmental issues
- CO2 Inferring the energy efficiency concepts practiced in vernacular buildings.
- CO3 Categorization of the various Passive (solar) strategies applicable in different contexts and exploring the various Active Strategies in increasing the energy efficiency.
- CO4 Appraise the performance of building envelope on the heat transfer from external to the indoor environment through the analysis of thermal property of selected building materials.
- CO5 Impart knowledge on the material properties for various building components and design strategies involved in design of the roof, walls and flooring.
- CO6 Relating the role of Building material (U value) to energy efficiency and criticising energy policy and standards

TEXT / REFERENCE BOOKS

1. Arvind Krishan, N. B. (2001). CLIMATE RESPONSIVE ARCHITECTURE: A Design Handbook for Energy Efficient Buildings. New Delhi: Tata McGraw-Hill Education India.
2. A.Ravikrishnan. (2008). Environmental Science & Engineering, 3rd Edition. Sri Krishna Publications, Chennai.
3. Cottrell, M. (2014). Guide to the LEED Green Associate V4 .
4. David Wright, J. C. (2008). The Passive Solar Primer: Sustainable Architecture. Schiffer Pub.
5. Majumdar, M. (2001). Energy-efficient buildings in India. TERI Press.
6. N. Arumugam, V. K. (2014). Environmental Science and Engineering. Saras Publication.
7. O H Koenigsberger, T. G. (2013). Manual of Tropical Housing and Building: Climate Design. Hyderabad: Universities Press India Pvt. Ltd.
8. Richard. (2006). Environmental science-towards a sustainable future. 8th edition, Prentice Hall of India, NewDelhi.

SAR1402 (Old)	SPECIFICATION AND ESTIMATION	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

- To introduce the fundamentals of specification and estimation in construction of buildings
- To understand and apply techniques, methods to determine the cost involved for various works
- To compare and analyse the various technologies and innovations
- To interpret valuation reports through case studies

UNIT1 SPECIFICATION AND SPECIFICATION WRITING

6 Hrs.

Necessity & importance of specification, **Types of Specification** - Specification writing, Principles of Specification writing - **Important aspects of the design of specification - sources of information - Classification of Specification** - Brief Specification for 1st class, 2nd class, 3rd class building - Detailed specification for earthwork excavation, plain cement concrete, Reinforced concrete, first class and second class brickwork, **Damp proof course, ceramic tiles/marble flooring and dado, woodwork for doors, windows frames and shutters, cement plastering, painting & weathering course in terrace.**

UNIT 2 ESTIMATION

10 Hrs.

Types & purpose of estimation - Approximate estimate of buildings - Bill of quantities - Factors to be considered - Principles of measurement and billing, contingencies, measurement of basic materials like brick, wood, concrete and unit of measurement for various items of work - **abstract of an estimate** - Deriving detailed quantity estimates for various items of work of a **building like earthwork excavation, brick work, plain cement concrete, Reinforced cement concrete works, wood work, iron works, plastering, painting, flooring, weathering course for a single storied building.**

UNIT 3 RATE ANALYSIS

8 Hrs.

Analysis of rates for main items of work using current market rates for materials, labour, plants, tools and equipment, **transportation, handling, storage and contractor's profit** - Preparing rate analysis for P.C.C, R.C.C, brick work, stone work, plastering and finishes.

UNIT 4 ECONOMICS AND ARCHITECTURE

6 Hrs.

Economics as a determinant to Architectural land & Built form - Construction Technology - Materials, technology, innovations, Labour - Site selection factors - Demand survey - Cost & sale value (guided by market)-Feasibility study and Government Proposals - Methods of contracting and its link to specification drafting - Business Environment and structure in practice - **Valuation, depreciation and its implications - case studies.**

Max. 30 Hours

COURSE OUTCOMES

On completion of the course the student will be able to

- CO1: Identify the importance of specification and estimation in construction
- CO2: Categorize detailed specification and estimation for all stages of construction
- CO3: Determine the rate analysis for various items of work involved
- CO4: Compare and contrast construction technology and innovation
- CO5: Integrate the knowledge learnt in preparing valuation reports
- CO6: Justify market value based on current scenario

TEXT / REFERENCE BOOKS

1. Rangwala S., Estimating and Costing (Professional practice), Anand Charotar Publishing House, 1990
2. Estimating, Costing, Specification and Valuation in Civil Engineering, M. Chakraborti, 2006
3. Dutta B.W., Estimating & Costing, UBS Publishers Distribution Pvt. Ltd., India, 1991
4. Gurcharan Singh and Jagdish Singh, Estimating Costing and Valuation, Standard Publishers Distributors, 2012
5. Tamilnadu Building Practice, Volume I, Government Publication
6. P.W.D Standard Specifications and Schedule of rates, Government Publication

SARA1603 (Revised)	SPECIFICATION AND ESTIMATION	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To introduce the importance of specification for quality control in design and construction.
- To help the students in the preparation of bill of quantities for estimation and budgeting in construction projects.
- To comprehend the rate for different items of work for costing and valuation of the construction projects.

UNIT 1 INTRODUCTION TO SPECIFICATION**4Hrs.**

Definition – Classification of Specification - Necessity and importance of specification. Specification writing - Principles of Specification writing. Important aspects in the design of specification – Differences between Brief and detailed Specification for 1st class, 2nd class, 3rd class building.

UNIT 2 INTRODUCTION TO QUANTITY ANALYSIS**8 Hrs.**

Introduction to Quantity analysis – Basic understandings of Unit measurements for various items of work – Mix proportions – Rules adopted for taking out of quantities. Methods adopted in quantity analysis. Deriving detailed quantity for various items of work for a single-story building like earthwork excavation, brick work, PCC, RCC works, wood works, iron and steel works, plastering, painting, flooring, weathering course etc. with different methods.

UNIT 3 ESTIMATION**8 Hrs.**

Types & purpose of estimation - Approximate estimate of buildings - Bill of quantities - Factors to be considered - Principles of measurement and billing, contingencies, measurement of basic materials like brick, wood, concrete and unit of measurement for various items of work. Deriving detailed estimates for various items of work for a single storied building along with the specification of the materials and BOQ.

UNIT 4 COSTING AND VALUATION**6 Hrs.**

Introduction to rates for main items of work using current market rates for materials, labour, plants, tools and equipment, transportation, handling, storage and contractor's profit – Construction technology involved. Preparing rate analysis for P.C.C, R.C.C, brick work, stone work, plastering and finishes - Deriving construction cost as per BOQ. Introduction to Valuation of the properties - terms and values - Depreciation and its types - Types, methods and purpose of valuation.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Preparation of Bill of quantities with the specification of 1st class construction for a single storied residential building. Arriving construction cost for a single storied residential building along with detailed estimation. Detailed specification and estimation for an apartment building with Stilt + Four floors from earth work excavation till the completion of project in MS excel to be submitted as portfolio.

Max. 30 Hours**COURSE OUTCOME:****On completion of the course the student will be able to**

- CO1** Acquire knowledge on the specification writing for any construction projects.
- CO2** Familiarize students on the need and importance of bill of quantities for arriving project budgeting.
- CO3** Explore different methods of estimation and preparation of detailed estimation for the Construction project
- CO4** Comparative analysis on the item rates for the different materials, hierarchy of labours, hiring equipment's etc.
- CO5** Evaluating the project cost with the detailed estimation and rate analysis.
- CO6** Skill to prepare a valuation report for a constructed building with depreciation factor.

TEXT / REFERENCE BOOKS

- 1.Chakraborti, M. (2006). Estimating, Costing, Specification & Valuation In Civil Engineering .
- 2.Dutta, B. N. (2016). Estimating and Costing in Civil Engineering (Theory & Practice). UBS Publishers' Distributors Pvt Ltd.
- 3.Rangawala. (2017). Estimating, costing and valuation [professional practice and quantity surveying] . Charotar Publishing House Pvt. Ltd.
- 4.Singh, G. S. (2013). Estimating Costing & Valuation. Standard Publishers Distributors

SC [REDACTED] CC	Added Content	AIL INTERIORS	L	T	P	Credits	Total Marks
			2	0	0	2	100

COURSE OBJECTIVES:

- To learn about the importance, techniques, and design applications for commercial and retail interiors.

UNIT 1 INTRODUCTION**4 Hrs.**

Introduction to commercial interior space design- types of commercial interior spaces – factors influencing designing of commercial interior spaces – materials used in designing commercial interior spaces. Collection of materials used for designing interior space. Application of codes, accessibility guidelines, and policies and procedures. Concepts, themes, ambience and aesthetics in designing commercial and retail interiors.

UNIT2 COMMERCIAL ART**8 Hrs.**

Concept of commercial art – Meaning and Definition, Development of commercial art. Art in Commercial space Designing and planning space for various commercial purposes – Restaurants and Hotels. Public utility services – Airport, Educational Institutions, Hospitals, Shopping complex, Exhibition, Schools, Malls, Universities and Trade Fairs.

UNIT 3 COMMERCIAL DISPLAYS**8 Hrs.**

Commercial display and Techniques – Interior Display – general Arrangement, principles and factors, types and merchandise display, types of lighting arrangements in commercial buildings. Window display – meaning and concept, Basic principles and techniques, types of window display, window arrangement.

UNIT 4 CONTEMPORARY TRENDS**6 Hrs.**

Study of user types, user behaviour concepts relevant to commercial interiors. Functional aspects related to circulation and integration of different spaces. New trends in commercial Architecture- design in commercial building. Basic concepts of commercial buildings. Features of Departmental stores and Shopping complex.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Demonstrate comprehensive understanding through accompanying assignments, group discussions, and site visits.

Max. 30 Hours**COURSE OUTCOME:**

- CO1** Analyse Commercial interior space design using different materials
- CO2** Develop art in commercial space designing and planning based on various purposes.
- CO3** Identify the role of lighting in commercial displays and techniques involved
- CO4** Understand the Concept of window display and window arrangement
- CO5** Synthesize various user behaviour concepts relevant to retail and commercial space.
- CO6** Discuss the Recent trends in commercial architecture.

TEXT / REFERENCE BOOKS

1. Gupta, C.B., Dr. Nair, Rajan (2003), Marketing Management, Sultan Chand & Sons, New Delhi.
2. Joseph, D.C., Julies, P. and Martiv, Z. (1992), Time saver standards for Interior Design and space Planning, New York.
3. Nair, R. (2002), Marketing, Sultan Chand and Sons Publisher, New Delhi.
4. Pattanchetti, C.C. Reddy, P.N. (1995), Marketing, Rainbow publishers, Coimbatore.

 New Course

SDE1801	BUSINESS MANAGEMENT & ENTREPRENEURSHIP	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To enable the students to Develop entrepreneurial skills.
- To analyze the environment related to small scale industry and business.
- To understand the process and procedures of setting up small enterprises.
- To develop management skills for entrepreneurship development.

UNIT 1 BUSINESS FOUNDATION**4 Hrs.**

Introduction to business and the forms of business enterprises; scope of management process; Set up of an independent design business, Hiring processes, Project Scheduling and work delegation,

UNIT 2 RESPONSIBILITIES OF A BUSINESS**4 Hrs.**

Ethical and social responsibilities of and within a business, with regards to the environment, consumers, workers, investors and business approaches; Contracts and Agreements, Conflict Resolution, Arbitration;

UNIT 3 RUNNING A DESIGN BUSINESS**8 Hrs.**

Business economics; project financing and banking system trends and guidelines within the emerging markets.

Intellectual Property- Registration process of Intellectual property Rights, Design Registration, and Brand/Trademark Registration; Core marketing strategies: branding, positioning, and competitive analysis. Product or service transformation to commodity quickly as competition & duplication of successful products, analysis of competition and advertising to position and brand products and services creation of successful brands

UNIT 4 ENTREPRENEURSHIP**10 Hrs.**

Meaning, need, transition to self-employment and Entrepreneurship, qualities of a good entrepreneur, problems of entrepreneurs. Economic, Legal, Socioeconomic, Psychological and Environmental factors influencing entrepreneurial development. Social Entrepreneurship, Business Entrepreneurship, Trading Entrepreneurship, Corporate Entrepreneurship, and Agricultural Entrepreneurship; Timmons Model of Entrepreneurship, Investment Models, Start-up Business Models, Business Plans, Pitch presentations, Small Business models; Agencies supporting entrepreneurial Development, Institutional Finance to Entrepreneurs.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Demonstrate comprehensive understanding through accompanying assignments, group discussions, and site visits. Visit to SIDCO, DIC and TIIC; 2. Case study of an enterprise and two entrepreneurs; 3. Preparation of a project proposal for funding.

Max. 30 Hours**COURSE OUTCOME:**

- CO1** Understand the foundations of a successful business practice
- CO2** Correlate the theories and concepts of business management from a regional point-of-view
- CO3** Understand the responsibilities of a business contract
- CO4** Evaluate the potential variety of roles of a professional Interior Designer, and the range of projects they may undertake.
- CO5** Examine the various entrepreneurial qualities and factors influencing development
- CO6** Formulate a business plan and project proposal based on own interests and ideas

TEXT / REFERENCE BOOKS

1. Gupta C.B, Srinivasan N.P, (2004). Entrepreneurship development in India, Sultan Chand & Sons, New Delhi.
2. Chunawalla S.A, (1991) Sales Management, Himalayan Publishing House, New Delhi.
3. Desai V., (2000). Project Management and entrepreneurship, Himalaya Publishing House, New Delhi.
4. David H. Moll, (1999) Entrepreneurship, Prentice Hall of India, New Delhi.
5. Jerkins F., (2000) Advertising, Prentice Hall of India, New India.

SARA2601	MATERIALS AND CONSTRUCTION STUDIO V		L	T	P	Credits	Total Marks
			1	1	3	3	200
Continuous Assessment	End Semester Examination	Min Pass Marks					
		Continuous Assessment	End Semester Examination				
150	50	75	25				

COURSE OBJECTIVES:

- To identify the various directions through which steel is effectively used in the built forms and environment.
- To understand the basic components of steel movable barriers in the external walls.
- To discuss the principles of utilizing steel in truss and space frames.

MODULE I STEEL IN CONSTRUCTION**40 Hrs.**

Iron: brief study on manufacture, composition, properties and uses of cast iron, wrought iron, pig iron - Steel: Composition, Properties, anticorrosive measures, mechanical and heat treatment of steel - Market forms of steel: Steel for Reinforcement - Hot rolled bars, CTD Bars, TMT bars, Welded wire fabrics; Steel for Pre stressed concrete; Structural steel; Stainless steel, steel alloys, current developments.

Different types of doors and windows (open able, sliding etc., methods of construction using steel)- Design and detailing of steel rolling shutter. Design and detailing of steel roof trusses (north-light, tubular, butterfly truss etc.,) including construction methods for roof covering using steel, FRP, polycarbonate, cement fiber sheets etc.

MODULE II LONG SPAN STRUCTURES**35 Hrs.**

Long span roofs using different types and materials (stadium and auditoriums). Methods of construction using cable Structure-principle of cable stayed bridges -space frame structures. Methods of construction using Shell structures and folded plates - various forms and classification of shells and types of folded plates, thumb rules

Max. 75 Hours

Modules	Assignments	Outdoor / hands on	Construction plates	No	Remarks
I	Container architecture	Report – students have to visit and study steel construction techniques give a brief report with sketches and photographs. Wire Model Fabric	Steel sections and foundation and column layout	1	Facilitates Architectural design VII
			Steel windows	1	
			Steel doors and rolling shutters	1	
			Steel truss and space frames	1	
II	International case studies with different roof forms and detail the steel joineries		Architectural detailing in public spaces	1	
			Application of concrete in the outcome of Architectural design V.	1	

OUTCOME
 for New Course

Student will be able to

- CO1** Categorize the ways through which steel is used in conventional as well as large span structures.
- CO2** Explain the various components of steel doors and rolling shutters and the thumb rules
- CO3** Integrate the steel members for structural and non-structural purposes in design.
- CO4** Devise and detail the applications of steel in public realms
- CO5** Combine steel with other materials for architectural applications

TEXT / REFERENCE BOOKS

1. Punmia B C, Jain.A.K. Jain,A.K. (1998). Comprehensive design of steel structures, Laxmi Publications Pvt. Ltd.
2. Boyne (1959). Architects working details, Vol. I, II, III, IV, & V, The Architectural Press, London
3. Ramaswamy G.S. (1984). Design and Construction of Concrete shell roofs, Krieger
4. Ahmad.M.H., Haji,M.T&Rasdi.M, (2000). Design Principles of Atrium Buildings for the Tropics, University Technology Malaysia.

SARA9601	DESIGN STUDIO VI		L	T	P	Credits	Total Marks
			0	0	13	7	400
Continuous Assessment	End Semester Examination	Min Pass Marks					
		Continuous Assessment	End Semester Examination				
250	150	125	75				

COURSE OBJECTIVES:

- To explore the challenges posed in designing group of buildings in large sites.
- To practice the knowledge on structural resolve and building service integration in Architectural creations.

METHODOLOGY PROPOSED**STAGE I**

Study through Participatory workshops/seminars/Special lectures on the various energy efficient planning and infra-structure aspects of designing large sites. Research on the various aspects of multi-functional, multi storied, Service intensive complex-built environments with horizontal and vertical circulation and understanding the dynamics of large span structures and integrating appropriate structural systems. Explore latest trends in construction technology and materials.

STAGE II**Phase I**

Conceptualize and integrate complex issues of the given program, the site, and the vertical and horizontal layering of functional requirements and services with a special focus on energy efficient solutions for both the building and the environment. The design solution should accomplish a strong resolve towards building structures and services systems.

Iteration and Ideation (Phase II)

Resolving the given design program by experimentation and multiple iterations to understand the interrelationship of spaces, the space in between buildings, the structural and services integration.

Phase II

Communicate the final outcome through high standard graphical representations (legible Architectural drawings) with details of structural systems, various services and energy efficient techniques incorporated in the design solution.

DESIGN INTEGRATION

Application of the knowledge gained by the students from core courses like energy efficient architecture, building structures and building services in developing the design.

Max. 195 Hours**SUGGESTED TYPOLOGIES:**

Mixed use or single use high rise buildings in a typical urban context like Large commercial complexes /multiplex/ hospital/ hotels/ serviced apartments, etc.,

COURSE OUTCOME

On completion of the course the student will be able to

- CO1** Analyze a multi-functional, multi storied, multi-use-built environments and render the needed spatial qualities
- CO2** Develop a knowledge repository to understand the importance of spatial proximities and connections
- CO3** Solve complex building structural systems in an efficient way and explore various combinations in structural systems
- CO4** Analyze and apply integration of specialized building services in multilevel planning of buildings.
- CO5** Evolve design focusing on Integrating sustainable energy concepts and techniques.
- CO6** Create an innovative built environment using various new age materials and advanced construction technology.

TEXT / REFERENCE BOOKS

1. De Chiara, J., & Crosbie, M. (2017). *Time-saver standards for building types* (4th ed.). McGraw-Hill Education.
2. Neufert, E. (2019). *Architects' data* (5th ed.). Wiley Blackwell.
3. Bureau of Indian Standards. (2016). *National building code of India 2016*.
4. Gauzin-Muller, D. (2002). *Sustainable architecture and urbanism: Concepts, Technologies, Examples*. BirkhauserVerlag AG.
5. Parker, D. And Wood, A. (2013). *The Tall Buildings Reference Book*. New York: Routledge.
6. Kloft, E. and Johann, E. (2003). *High-rise Manual: Typology and Design, Construction and Technology*, 1st Ed. Basel: BirkhauserVerlag AG.
7. Giedion, S. (2009). *Space, Time and Architecture*, rev. Ed. Cambridge: Harvard University Press.
8. Lawson, F. (2007). *Congress, convention and exhibition facilities*. Oxford u.a.: Architectural Press.
8. Osamu, A. W., Linde, R. M. and Bakhoun, N. R. (2011). *The professional practice of architectural working drawings*. 4th Ed. Hoboken: John Wiley & Sons.

SARA1602	BUILDING SERVICES-IV	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To understand the basic principles of physics of sound and enable them to apply the knowledge in various buildings.
- To make students realize the importance of acoustics and equip them with the knowledge for designing acoustically sound performing spaces.
- To make the students understand the design strategies and process in selecting the appropriate vertical transportation devices
- To explore the necessity of integrating the services and centralised control management

UNIT 1 INTRODUCTION TO SOUND**4 Hrs.**

Characteristics of sound – reflection, diffusion, transmission, diffraction, absorption - Human ear and hearing – Basic terminology: frequency, pitch, tone, timbre, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, sound masking, inverse square law – frequency range of audible sounds Types of noises, transmission of noises, acoustical comfort, Concept of Geometric acoustics

UNIT 2 ACOUSTICS**8 Hrs.**

Planning & Design against outdoor noise – for air traffic, road traffic and rail traffic – air borne noise & structure borne noise / impact noise – sound isolation – sound transmission class - Acoustic defects – reverberation time - Absorption coefficients of materials. Sound absorbing materials: porous materials, panels, membrane absorbers, space/functional absorbers & cavity / Helmholtz resonators- ECBC requirements

UNIT 3 DESIGN OF PERFORMING SPACES**8 Hrs.**

Basic principles in design of auditorium, concert halls, open air theatre, Recording and Broadcasting studio. Sound systems – introduction – types – equipment's such as mics, speaker's etc. – standards – basic principles of sound system design. Exposure to acoustic design and simulation software.

UNIT 4 SECURITY SYSTEMS AND SERVICES INTEGRATION**6 Hrs.**

Safety and security systems, PAS - access control system - firefighter telephone system - CCTV surveillance system - Control of Computerized HVAC Systems -Integration of services - Water pump monitoring & control, Electrical - power monitoring - fire alarm system, firefighting system and monitoring - IBMS system and its components –ECBC requirements.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS**4 Hrs.**

Assignments on solving acoustic problems – Sabine's formula. Case study and observation / analysis of Acoustical Spaces – Concert halls, recording studio, etc. - Discussion on acoustic materials available in market with catalogue and samples. Assignment-Working out individual service layout and arriving coordinated layout for IBMS - Case study on IBMS and critical analysis of the service integration - Applying the knowledge in their current design exercise.

Max. 30 Hours**COURSE OUTCOME:****On completion of the course the student will be able to**

- CO1** Understand the fundamental principles of acoustics and its importance in architectural design.
- CO2** Describe the different types of noise, their transmission and the measures to isolate / control them
- CO3** Analyze the various behavior of sound in indoor and outdoor space.
- CO4** Solve the acoustical design problems in a space by acoustic treatments.
- CO5** Design architectural spaces with respect to acoustic principles
- CO6** Understand the need of service integration and automated control

TEXT / REFERENCE BOOKS:

6. Siraskar K.A. (1972). Acoustics in Building Design, Orient Longman Ltd., 1972
7. Kandaswamy S., (2005), Architectural Acoustics and Noise Control, Allied publishers Pvt. Ltd., 2005
8. Egan, D (2007). Architectural Acoustics, Rose publishing classics,
9. Marshall long, Architectural Acoustics, Elsevier academic press New York, 2006

10. Cavanaugh,W.J,Tocci,G.C.,. Wilkes, (2009). J.A Architectural Acoustics: Principles and practice,2nd edition, John Wiley & sons,
11. Sinopoli, J. (2010), Smart Buildings for Architects,Owners and Builders, Elsevier Inc.
12. Energy Conservation Building Code user guide – ECBC, Bureau of Energy Efficiency, New Delhi, India

SARA8205	THERMAL COMFORT AND PASSIVE DESIGN	L	T	P	Credits	Total Marks
		3	1	0	3	100

COURSE OBJECTIVES:

- To understand the importance Thermal comfort
- To devise the applicability of passive design in built environment
- To comprehend the parameters for Thermal comfort.

UNIT I HUMAN BEHAVIOUR

9 Hrs

Atmospheric and thermal comfort, building performance, and occupant health, safety, and productivity. Factors responsible, energy systems for human comfort, PPD & PMV analysis

UNIT II NATURAL INFLUENCES

9 Hrs

Micro and Macro thermal comfort scales — Interpreting Material data through Bio climatic charts Sun path, Passive strategies, Solar heat gain, Solar radiation, Stack effect, etc.

UNIT III DESIGN ELEMENTS

9 Hrs

Modifications of Architectural & Landscape Elements — Fenestration, roof, walls, flooring, trees and landscape. Climatic zones and architectural features -Courtyard, Cross ventilation Daylight factor, Walls, Trombe wall, Buried pipe system, Wind, Velocity, Wind tower etc.

UNIT IV BUILDING MATERIALS

9 Hrs

Properties of building materials related to Climatic zones -Properties of Heat transfer and energy flow, U-value, Appropriate materials. Mass materials/components selection strategy - Photovoltaic-Recycled Materials-Utilization of building water conserving installation- Evaporative coolers.

UNIT V COMPREHENSIVE LEARNING

9 Hrs

Designing for optimum Day Lighting-Ventilation and Thermal Comfort Standards for the identified built environment

Max. 45 Hours

COURSE OUTCOME:

- CO1 Understand the parameters for thermal comfort
- CO2 Understand the passive design strategies in built environment
- CO3 Acquire knowledge about building materials to specific Climatic zones
- CO4 Understand human thermal comfort and the means to achieving the same
- CO5 Acquire knowledge about Renewable energy
- CO6 Integrate the parameters learnt in thermal comfort

TEXT / REFERENCE BOOKS

1. Arvind Krishna, Simos Yanas, Nick Baker, S.V. Szokolay, Climate Responsive Architecture, Tata McGraw Hill Pub. Co, 2001
2. Daniel D. Chiras, The Solar House: Passive Heating and Cooling, Chelsea Green Publishing, 2002
3. David Lloyd Jones, Architecture and the Environment: Contemporary Green Buildings, Overlook Hardcover, 1998.
4. Givoni, Climate Considerations in Building and Urban Design, Wiley; 1st edition, 1998.
5. Hawkes Dean and Foster Wayne, Energy Efficient Buildings: Architecture, Engineering, and Environment. W. W. Norton & Company; First American Edition, 2002.
6. O.H Koenisberger, Manual of Tropical housing and climate, Longman Group United Kingdom, 2012.

SARA3702	ARCHITECTURAL PHOTOGRAPHY AND JOURNALISM	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To make students aware about Architectural Journalism
- To encourage them to pursue Architectural Critiquing, Writing, Documentation and Research.
- To familiarize students in preparation of Book Reviews and Articles, with Photographs to support their work.

UNIT 1 INTRODUCTION TO ARCHITECTURAL JOURNALISM

4 Hrs.

Key concepts and objectives of Journalism; Theories of journalism, techniques and processes. Skills for contemporary architectural reportage: documentation, research, reporting, writing, editing, photography, columnists, interviewing, networking, public relationships, critiquing & criticism, media & publishing. Regional, National and International discussion forums, Discussions on topics needed in an architectural journal and current issues; Types of journals, works of key architectural journalists.

UNIT 2 ARCHITECTURAL WRITING AND CRITICISM

10 Hrs.

Introduction to various types of writing- News stories, critical essays on particular buildings, social issues, etc. Interviewing techniques, Argument and debate; critical thinking, evidence, proof, refutation, persuasion; Editing for print and web - Text preparation, formatting, page composition, Mode of presentation, Standards and Guidelines for documentation, Code of ethics, Basic knowledge on Press laws, Press Council of India, Multimedia/online journalism and digital developments. Introduction importance of Criticism. Relationship between Architecture and Criticism, Criticism and social commentary. Failures of Architectural Criticism. Analysis of various critical themes and their comparison, criticizing the built environment in various aspects and writing about criticism. Seminars on Indian architectural writers, journalists and critics.

UNIT 3 PHOTOGRAPHIC TECHNIQUES

8 Hrs.

Introduction to architectural photography: concepts of colour, lighting, distance, visual angle and perspective, Framing and composition: Visual weight, Rule of thirds, Leading lines, Symmetry, Abstraction; Context, Subject, Background and foreground relationships. Technical definitions and settings; Types of cameras and lenses, properties and priorities; Shooting parameters, Exposure, Aperture, Shutter Speed, ISO; Use of various post processing tools and controls; printing techniques.

UNIT 4 PHOTO JOURNALISM

6Hrs.

Analysis of subject and content, Photo-documentation techniques for buildings highlighting quality of architectural spaces. Supporting the write-ups about the built environment with photographs, Understanding pictorial, verbal and visual relationship of architecture journalism. Expression and Imagery, Time and space in Image

UNIT 5 CONSTRUCTIVE ASSIGNMENTS

2 Hrs.

Writing Case studies, book reviews, literature reviews- Analysis of newspaper, magazine, or website articles and students will have to respond with their own piece of writing- Evaluation of historical and contemporary examples of written and journalistic criticism of architecture, analysis of major critical themes - Presentations, discussions and debates on works of Indian and international writers and critics - Looking at and explaining a building in today's scenario and what is happening now and what should be the future, reflecting on and criticizing architectural projects - Writing about the new technologies and construction techniques in today's architecture - Students will be assessed by the quality of their writing, the level of understanding they bring to the readings and topics, and the quality of their in-class presentations and participation.

MAX. 30 HOURS

COURSE OUTCOME:

On completion of the course the student will be able to

CO1 Understand importance of analysing architecture and its interpretation through journalism.

CO2 Structure architectural journals, write descriptive and analytical reports, edit write ups, book reviews, pagecompositions and printing processes.

CO3 Analyse recent historical and contemporary examples of written and journalistic criticism of architecture, including selected writings by Indian and overseas critics

CO4 Distinguish major critical themes and thematic categories in historical and contemporary architectural writing.

CO5 Apply elements and principles of architectural photographic work that effectively communicates ideas.

CO6 Post-process digital images to create various outcomes.

TEXT / REFERENCE BOOKS

1. Bender, T. (1988). Architecture and the Journalism of Ideas. Design Book Review, (15), 47-49
2. Waugh, P., & Fuller, D. (Eds.). (1999). The arts and sciences of criticism. Oxford University Press
3. Al-Asad, M., Musa, M., & Aga Khan Trust for Culture. (2006). Architectural criticism and journalism: global perspectives: proceedings of an international seminar organised by the Aga Khan Award for Architecture in association with the Kuwait Society of Engineers, 6-7 December 2005, Kuwait. Aga Khan Trust for Culture.
4. Fisher, T. (2011). The death and life of great architecture criticism. Places Journal.
5. Wiseman, C. (2014). Writing Architecture: A Practical Guide to Clear Communication about the Built Environment. Trinity University Press.
6. Heinrich, M. (2017). Basics Architectural Photography. Birkhäuser.
7. Harris, M. G. (2002). Professional architectural photography. Taylor & Francis.
8. Nieman Reports: Architectural Criticism: Dead or Alive by Blair Kamin.

SARA8307	TALL BUILDINGS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES:

- To acquire knowledge of advanced structural systems and analysis techniques for tall buildings. To study the behavior and failure modes associated with different structural forms.
- To be familiar with construction techniques and materials used in building assemblies.

UNIT 1 DESIGN PRINCIPLES

9 Hrs.

Design philosophy, Reliability Based design, introduction to working stress design, limit state design, plastic design. loading, sequential loading, Gravity loading, dead load, live load, Construction load, Combined loading, Wind Loading - Static and dynamic approach – an insight into Analytical and wind tunnel experimental method. Earth quake loading

UNIT2 VARIOUS STRUCTURAL SYSTEMS

9 Hrs.

Factors affecting growth, Height and structural form - types- braced forms - infilled frames, shear walls, coupled shear walls, wall frames, tubular, cores, outrigger - braced and hybrid mega systems.

UNIT3 ANALYSIS AND DESIGN

9 Hrs.

Modeling for approximate analysis, Accurate analysis and reduction techniques, Analysis of a building as total structural system considering overall integrity and major sub system interaction,

UNIT 4 SITE INVESTIGATION

9 Hrs.

Assembly of buildings, Safety Policy, Stages of Site investigation, On site tests, Foundation, Basement construction and Water proofing, Materials, Selection & handling, Wall & Floor construction, Roof Construction.

UNIT 5 CONSTRUCTIVE ASSIGNMENT

9 Hrs.

Case study presentation of tall buildings around the world.

Max.45 Hrs.**COURSE OUTCOME**

On the end of the course, student will be able to

C01 Demonstrate a comprehensive understanding of the principles and considerations underlying different design approaches

C02 Comprehend the various types of forms safety of high-rise structures.

C03 An insight into modeling techniques that can be used for approximate and accurate analysis of building structures

C04 Oversees the assembly process, ensuring adherence to safety regulations, and maintaining the structural integrity and quality of the building.

C05 Adopt modern materials and methods for constructing tall buildings.

TEXT / REFERENCE BOOKS

1. Taranath. B. S. "Structural Analysis in tall buildings", McGraw Hill, 1988.
2. Bryan Stafford Smith, Alexcoull. "Tall building structures", Analysis and Design, John Willey and Sons inc., 1991.
3. Beedle. L.S. "Advances in Tall Buildings" , CBS Publishers & Distributors, Delhi, 1986.
4. Lin T.Y., States Burry D., "Structural Concepts and systems for Architects and Engineers",1981.
5. Chew Yit Lin, Micheal, "Construction Technology for Tall Buildings", Singapore University Press, 2nd Edition, 2006.

SAR1603	FILM SET AND TEMPORARY STRUCTURES DESIGN	L	T	P	Credits	Total Marks
		2	0	0	2	100

Course objectives:

- To explore and synthesize the various elements involved in a set.
- To give an insight to approached to art direction.
- To understand the process of designing and creating a set.

UNIT 1 ELEMENTS OF A SET**6 Hrs.**

Elements of Image Making - stage craft, Accessories, Props, Design of Space - elements of Form, Colour, Light, Sound, Time, Graphic, Location, themes and materials, graphics design, reuse and set design.

UNIT 2 THEORY OF ART DIRECTION**8 Hrs**

Drawing and Design, Theory for Art Direction, Relations between Scene vs Characters, Scene vs Painting, Scene vs Script, Scene vs Drama, translation from 2D to 3D.

UNIT 3 PROCESS OF DESIGNING AND CREATING A SET**8 Hrs**

Analyze scripts to determine theme, concept, mood, location, style, period, special needs, Character, setting of the drama/ movie, initial sketches of the design, materials and construction of the set and execution.

UNIT 4 CASE STUDIES**8 Hrs.**

Diverse concepts, philosophies and set designs of known art directors, movie reviews, case studies of different film cities in different contexts.

Max. 30 Hours**Course Outcomes:****On completion of the course the student will be able to**

- CO1:** Exploring the various elements to be included while designing sets.
- CO2:** Comprehending the relationship between the various aspects involved in art direction.
- CO3:** Ability to understand and sequence the processes involved in the designing and creation of sets.
- CO4:** Constructing knowledge to review the sets created in movies.
- CO5:** Critically analyze the philosophies of know art directors in documenting cities, buildings etc.

TEXT / REFERENCE BOOKS

1. Neumann D., Film Architecture: Set Designs from "Metropolis" to "Blade Runner", Prestel, 1997
2. Fear B., Architecture + Film II, Architectural Design, Wiley Academy, 2000
3. Lamster M., Architecture and Film, Princeton Architectural Press, 2013
4. Nystorm H., Creativity and Innovation, John Wiley & Sons, 1979

S102APRO1	CAPSTONE PROJECT	L	T	P	Credits	Total Marks
		0	0	28	18	800

COURSE OBJECTIVES:

To evaluate the students to demonstrate the comprehensive understanding and knowledge gained through various semesters in an Architectural project. Students shall be permitted to undertake any live/ competition/ Government projects, which was approved as the pre thesis topic in the previous semester.

FOCUS

To deal the design problem in a real life like situation.

METHODOLOGY PROPOSED

Students will be encouraged to approach the design problem identified by him/her in a systematic way with guidance from a Supervisor on a one-to-one basis. There shall be five continuous assessments during the semester by the review committee comprising of The Internal thesis coordinator, internal guide and External guide.

The stages are:

- Concept and Site Zoning along with the previous semester Pre-Thesis report and study sheets to be presented.
- Conceptual sketches, models, plans, sections, elevations.
- Scheme I of the Design Drawings
- Scheme II of the Design Drawings
- Pre- Final stage
- Final University Viva Voce

The review marks obtained in the five assessments shall be taken into account for the internal marks. A jury comprising of internal and external examiners shall conduct the final Viva-Voce examination of the Thesis/Project in the institution at the end of the Eight semester as a final Viva Voice. The total marks scored shall be the sum of marks secured in the continuous assessments and the final university viva-voce examination.

The development of thesis is to enable the students to handle all the phases of building/interior design. It is a subject for scholastic study through analysis and should reflect the knowledge gained from all the courses undertaken by the student in all the previous semesters. It is a development of design and detailing with integration of all the technical aspects. The thesis project shall be submitted in the form of drawings, project report and material charts. Each student is required to submit two hard copies of the report along with a soft copy of the report and sheets. The report shall be based on the literature review, Case Study analysis and inferences, Standards, Site Analysis, Requirements and area statements along with the concepts, design processes and the final design.



New Course