SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMAKURU
School of Architecture

Vision

To establish as a pioneer institute in planning and design of built environment through excellence in teaching, research, consultancy and design innovation.

Mission

- To create conducive academic ambience that nurtures aesthetic attitude, technical confidence, and critical thinking among students.

- To develop research and design innovation skills in students to address various societal needs.

- To inculcate professional ethics based on values and entrepreneurial skills among students.

Program Educational Objectives (PEO's)

Graduates from school of Architecture will achieve the following Program Educational Objectives within few years of graduation

- Graduates will showcase capabilities for competent practice of Architecture and enhance career by pursuing higher education
- Graduates will exhibit strong design skills to solve complex real-time problems through high technical skills and strong communication along with the knowledge of various domains of architecture including landscape, architectural conservation, interior design, energy conscious architecture, urban design and planning, construction project management, alternative building techniques, building information modeling and digital architecture
- Graduates will demonstrate professionalism, ethical conduct, societal concerns, effective team work and adapt to dynamic global and local needs engaging in lifelong learning

Program Specific Outcomes (PSO's)

PSO1: Develop critical thinking to analyze, evaluate, synthesize and generate appropriate design solutions for varying scales and levels of complexity.

PSO2: Explore possibilities and application of various building materials, construction techniques, building systems and services.

PSO3: Draw inspiration from divergent architectural theories and history along with varied indigenous and vernacular settings.

PSO4: Demonstrate effective communication skills to present architectural works and comprehend professional practice.

Programme Outcomes (PO's)

1. **Architectural Knowledge:** Apply the knowledge of design principles, building systems & technologies, humanities and environmental aspects in design, planning and construction.
2. **Problem Analysis**: Identify, formulate, review research literature and analyse various scales of architectural projects to arrive at tangible conclusions.
3. **Design/ Development of solutions:** Design solutions to integrate interdisciplinary approach for contextual issues pertaining to built-environment.
4. **Conduct investigations of complex problems:** Use research-based knowledge and methodologies including context analysis, case studies, project requirements and synthesis of the information to provide context sensitive solutions.
5. **Modern tool usage:** Identify, select and apply the appropriate tools, techniques and resources to predict, design and simulate qualitative and quantitative outcomes with an understanding of its limitations.
6. **The Architect and Society:** Apply reasoning to address socio-cultural, legal and safety aspects relevant to the professional practice and social responsibility.
7. **Environment and Sustainability:** Understand the importance of the architectural design solutions in environmental and social contexts to demonstrate the need for sustainable built environment.
8. **Ethics:** Apply ethical principles and commit to professional ethics, responsibilities and norms of Architectural profession.
9. **Individual and teamwork:** Function effectively as an individual as well as a team member or a leader in diverse interdisciplinary settings.
10. **Communication:** Comprehend and effectively communicate issues related to architecture, community and society at large through documentation, graphical and verbal presentations.
11. **Project management and Finance:** Demonstrate knowledge and understanding of professional and management principles to apply to individual work, as a team member and as a leader, to manage projects in multidisciplinary environments.
12. **Life-Long learning:** Recognize the need for, have the preparation and ability to engage in independent and lifelong learning in the changing domain of societal and technological advancement and adopt it in individual's professional practice.

SYLLABUS

FOR

V and VI semester B.ARCH

2025 -2026

School of Architecture

Siddaganga Institute of Technology

(An Autonomous Institution affiliated to V.T.U., Belagavi, Approved by AICTE, New Delhi Accredited by NAAC with 'A++' Grade and ISO 9001:2015 Certified)

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SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMAKURU

(An Autonomous Institution affiliated to VTU, Belagavi, Approved by AICTE, New Delhi, Accredited by NAAC with 'A++' Grade & ISO 9001:2015 Certified)

B.ARCHITECTURE

SCHEME OF TEACHING AND EXAMINATION (270 Credits Scheme)

(Applicable to the students admitted during 2023-24)

V Semester

Sl. No.	Course and Course Code		Course Title		Teaching / Paper setting Dept.	Teaching hrs/week						Examination					Credits
						Lecture	Studio		Practical	Seminar	Self Study	Duration in hrs.	Mode of Exam	CIE Marks	SEE Marks	Total Marks	
							Core	Applied									
						L	S		P	SE	SS						
1.	PCC	5ATS01	Architectural Design-IV				8						Viva	50	50	100	**8**
2.	BSAE	5ATS02	Building Materials and Construction-V			1	3						Viva	50	50	100	**4**
3.	SEC	5ATS03	Building Information Modeling-II						3				Term Work	50	50	100	**3**
4.	BSAE	5ATS04	Structural Analysis-II			1			2				Viva	50	50	100	**3**
5.	PCC	5ATT01	History of Architecture-V			3						3	Theory	50	50	100	**3**
6.	BSAE	5ATT02	Building Services-III (Air-Conditioning, Mechanical Transportation & Fire Protection)			3						3	Theory	50	50	100	**3**
7.	PCC	5ATT03	Sociology & Building Economics			3						3	Theory	50	50	100	**3**
8.	PEC	5ATPE	Professional Elective-III	Alternative Building Technologies (ATPE07)				2					Term Work	50	50	100	**2**
				Product Design (ATPE08)													
				Environmental Responsive Architecture (ATPE09)													
9.	NCMC	NMC02-AT	National Service Scheme		PE				2			-	-	100	-	100	**0**
			Yoga														
			Physical Education														
			Total			11	11	2	7					**500**	**400**	**900**	**29**

Note: PCC: Professional Core Course, **BSAE**: Building Science and Applied Engineering Course, , **INT** –Internship,
HSMC: Humanity and Social Science & Management Courses, , **SEC** –Skill Enhancement Courses. **AEC**- Ability Enhancement Course **UHV**- Universal Human Value Courses

L –Lecture, **S**- Studio, **P**-Practical, **SS** – Self-Study Component, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Examination

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B.ARCHITECTURE

SCHEME OF TEACHING AND EXAMINATION (270 Credits Scheme)

(Applicable to the students admitted during 2023-24)

VI Semester

Sl. No.	Course and Course Code		Course Title	Teaching / Paper setting Dept.	Teaching hrs/week						Examination					Credits
					Lecture	Studio		Practical	Seminar	Self Study	Duration in hrs.	Mode of Exam	CIE Marks	SEE Marks	Total Marks	
						Core	Applied									
					L	S		P	SE	SS						
1.	PCC	6ATS01	Architectural Design-V			8						Viva	50	50	100	**8**
2.	BSAE	6ATS02	Building Materials and Construction-VI		1	3						Viva	50	50	100	**4**
3.	PCC	6ATS03	Working Drawing-I			4						Viva	50	50	100	**4**
4.	BSAE	6ATS04	Structural Analysis-III		1			2				Viva	50	50	100	**3**
5.	PCC	6ATT01	Contemporary Architecture		3						3	Theory	50	50	100	**3**
6.	BSAE	6ATT02	Building Services-IV (Acoustics & Noise Control)		3						3	Theory	50	50	100	**3**
7.	PCC	6ATT03	Landscape Architecture		3						3	Theory	50	50	100	**3**
8.	PEC	6ATPE	Professional Elective-IV: AI in Architecture (ATPE10) / Bio-Mimicry (ATPE11) / Post Modern Art Practices (ATPE12)				2					Term Work	50	50	100	**2**
9.	NCMC	6ATST	Study Tour		Study trip conducted after IV Semester Examination							Portfolio	100	-	100	**0**
10.	NCMC	NMC02-AT	National Service Scheme / Yoga / Physical Education	PE				2					100	-	100	**0**
			Total		11	15	2	4					**600**	**400**	**1000**	**30**

Note: PCC: Professional Core Course, **BSAE**: Building Science and Applied Engineering Course, , **INT** –Internship,
HSMC: Humanity and Social Science & Management Courses, , **SEC** –Skill Enhancement Courses. **AEC**- Ability Enhancement Course **UHV**- Universal Human Value Courses

L –Lecture, **S**- Studio, **P**-Practical, **SS** – Self-Study Component, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Examination

ARCHITECTURAL DESIGN - IV

Contact Hours/Week	:	08	Credits	:	8.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	120	SEE Marks	:	50
Course Code	:	5ATS01	Exam Mode	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with the impact of technology, utilities, and regulations in shaping architecture.
2. Understand the various complex parameters to be considered while designing in the public domain.

COURSE OUTLINE:

- Background study to understand the (thematic) abstract, organic character of architecture (symbolism, aesthetics, identity) in the public domain; influence of environmental, socio-cultural, economic dimensions; user perception.
- The studio shall emphasize non-linear interdisciplinary design process encountered in Architectural design and the importance of other fields of knowledge in Architectural Design. The Design Studio will give prominence to bridging the gap between innovations in materials and techniques of construction.
- The Design studio will also give importance to include and encourage the use of passive design features, natural cooling systems, sustainable active cooling system using natural and low global warming potential refrigerants, vernacular, local, and low embodied energy/carbon materials and sustainable water, waste management systems.
- Projects shall be of urban scale with multiple functions; identity of public building (aesthetics, symbolic character, meaning, and environmental response) will be one of the architectural goals. Museums, art galleries, theme- based hotels, transport interchanges, terminals, shopping areas, informal markets can be chosen.
- Design emphasis shall be on the use of innovations in green materials and techniques of construction.

NOTE:

a. Relevant case studies and literature studies can be given by the studio teachers and a report must be compiled by the students.
b. A minimum of two architectural projects must be tackled in the semester.
c. One of the design exercises can be carried out as group work to explore possibilities of students working as teams.
d. Vertical studio involving other semesters can be encouraged to carry out one full or part project.
e. The portfolio covering the above topics shall be presented viva voce.
f. Projects can be presented using appropriate computer aided tools.
g. Knowledge of the alternative materials and techniques taught in building construction can be incorporated into design and detailing.
h. The projects listed in the syllabus are only to state the scale and complexity. The projects of similar scope can be introduced by the teachers.

REFERENCE BOOKS:

1.	Richard Patrick Parlour	Building Services: A Guide to Integrated Design : Engineering for Architects, Integral Publishing, 1997, ISBN: 9780646342603, 0646342606
2.	Paul Tymkow, Savvas Tassou, MariaKolokotroni, Hussam Jouhara	Building Services Design for Energy Efficient Buildings, CRC Press, 2013, ISBN: 9781136893650, 1136893652
3.	RussellFortmeyer, Charles D. Linn	Kinetic Architecture: Designs for Active Envelopes, Images Publishing Group, 2014, ISBN: 9781864704952, 1864704950
4.	Michael Fox	Interactive Architecture : Adaptive World, Princeton Architectural Press, 2016, ISBN: 9781616895112, 161689511X

Course Outcomes: After the completion of the course, students will be able to:

1. **Create** architecture as an envelope to system dependent program.
2. **Design** buildings considering bye-laws, services and structural requirements.

3. **Employ** computer aided design techniques to generate drawings and models for effective communication of design.
4. **Design** and detail architectural form, space and experience emphasizing skins and support of structural systems.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1			3										3			
	CO2				3									3			
	CO3					3					3		3	3			
	CO4		3	3		3							3	3			

BUILDING MATERIALS AND CONSTRUCTION - V

Contact Hours/Week	:	04	Credits	:	4.0
Total Lecture Hours	:	15	SEE Marks	:	50
Total Studio Hours	:	45	CIE marks	:	50
Course Code	:	5ATS02	Exam mode:	:	Viva

Course Objectives: This course will enable students to:

1. Understand the applications of vaults and domes.
2. Identify large span roof structures.
3. Understand the applications of pre-engineered buildings.

COURSE OUTLINE:

- **Introduction to Vaults & Domes** - Qualitative influence of domes and vaults on building's interaction with solar heat and ventilation.
- **Vaults & domes I** - Principles and methods of construction including techniques and details of form-work. Construction of Masonry Vaults and Domes.
- **Vaults & domes II** - Concepts and construction of Reinforced concrete domes and vaults with formwork design.
- **Introduction to pre-engineering metal buildings** - its manufacturing and assembly process, details, market study and most importantly the materials energy intensiveness and its impact on the environment.
- **Detailing of a Pre-engineered building** - Including Roof fixing details with aluminium sheet and profiled MS sheet cladding.
- **Introduction to Advanced foundation** - Mat foundations, Pile foundations; different types of piles, precast piles, cast-in-situ piles in wood concrete and steel.
- **Pile foundation construction** - method of driving piles, Sheet piling, pile caps, etc.
- **Earth retaining structure** - Selection, Design, Construction of retaining structures including gravity, cantilever, sheet pile, and anchored earth and mechanically stabilized earth (reinforced earth) walls.
- **Introduction to large span roofs** - Principles and methods of construction of hyperbolic paraboloid shell roof, folded plate and cylindrical shell roof, geodesic domes, space frames, tensile and pneumatic structures.

NOTE:

a. Minimum one plate on each construction topic and study of material in the form of portfolio.
b. Miniature models to scale should be done for the construction related topics.
c. Site visits / case studies on related topics to be arranged by studio teachers and report to be compiled by students.
d. Market survey of materials should be carried out by students.
e. The entire portfolio on construction and materials shall be presented for viva.

REFERENCE BOOKS:

1.	Mr Roy Chudley & Roger Greeno	Construction Technology, Edition 4, Prentice Hall, 2009, ISBN : 0131286420, 978-0131286429
2.	S. C. Rangwala	Engineering Materials [Material Science], Charotar Publishing House Pvt. Limited, 2008, ISBN : 9788185594965, 8185594961
3.	R. Barry	The Construction of Buildings Volume 1, Seventh edition, Blackwell Science Ltd, 1999, ISBN : 8176710016, 978-8176710015
4.	Glenn M. Hardie	Building Construction: Principles, Practices, and Materials, Prentice Hall, 1995, ISBN : 0133505707, 9780133505702
5.	G. D. Taylor	Materials in Construction, CRC Press, 2013, ISBN : 9781317879022, 1317879023

Course Outcomes: After the completion of the course, students will be able to:

1. **Elucidate** the methods and details of constructing Vaults and Domes**.**
2. **Explore** the possibilities of pre-engineered buildings in construction industry.
3. **Interpret** the applications of large span roofs in designs**.**
4. **Identify** the uses of advanced foundation techniques in construction industry.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3													3		
	CO2	3											3		3		
	CO3	3									3		3		3		
	CO4	3											3		3		

BUILDING INFORMATION MODELING-II

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Practical Hours	:	45	SEE Marks	:	50
Course Code	:	5ATS03	Exam Mode	:	Term Work

Course Objectives: This course will enable students to:

1. Familiarize with the Archicad interface, tools, and BIM concepts to effectively model architectural projects.
2. Create, modify, and manage architectural elements using Archicad's modeling features.
3. Generate accurate architectural documentation of the project.
4. Enhance collaboration skills through teamwork features and prepare for integrated workflows with consultants and other software.

COURSE OUTLINE:

- **Introduction to ARCHICAD:** Overview of BIM (Building Information Modeling), Interface and workspace navigation, Basic tools and commands.
- **Project Setup and Template Management:** Setting up projects and templates,Working with project preferences and settings, Managing layers, views, and layouts.
- **Modeling Basics**: Creating walls, slabs, roofs, and openings, Adding doors, windows, and objects, Editing and modifying building elements.
- **Advanced Modeling Techniques:** Using morph and mesh tools for complex forms, Working with stairs, railings, and curtain walls, Creating and editing complex profiles.
- **Documentation and Detailing:** Generating plans, sections, and elevations, Annotating drawings (dimensions, text, labels), Working with detail views and sheets.
- **Collaboration and Teamwork:** Using teamwork features for multi-user collaboration, Linking and importing external files (CAD, PDF, images), Exporting models and drawings for consultants.
- **Visualization and Presentation:** Creating 3D views and perspectives, Applying materials and rendering basics, Preparing presentations and layout sheets.
- **Practical Project Work:** Developing a small architectural project using ARCHICAD, Emphasis on BIM workflow and documentation standards.
- **Adobe suite:** Presentation of the project with adobe illustrator or InDesign.

REFERENCE BOOKS:

1.	Autodesk Manual for Revit
2.	Adobe Suite Manual

Course Outcomes: After the completion of this course, students will be able to:

1. **Summarize** the Archicad interface from basic to advanced modeling tools to create complex building components.
2. **Create** comprehensive architectural documentation with precise annotations, adhering to professional standards.
3. **Demonstrate** effective project management skills by organizing layers, views, and layouts within Archicad.
4. **Develop** presentation-ready 3D visualizations and layout sheets rendering with adobe illustrator or InDesign.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1					3							3				3
	CO2					3					3		3				3
	CO3					3					3		3				3
	CO4					3				3			3				3

STRUCTURAL ANALYSIS - II

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	15	CIE Marks	:	50
Total Practical Hours	:	30	SEE Marks	:	50
Course Code	:	5ATS04	Exam mode	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with steel structural systems and their selection criteria for integration in building design.
2. Study different materials and construction methods of rigid frame structures.
3. Get introduced to composite flooring, materials used and their structural design.

COURSE OUTLINE:

- **Structural Steel:** Different kinds of Steel, their Basic characteristics of Steel & Light Gauge Steel materials.
- **Concepts of design of Steel Structures:** Introduction to the concept of Working Stress Design and Load and Resistance Factor Design.
- **Steel Structural Systems:** Introduction to Rigid Portal Frames design of a one storey industrial building 18M X 48m with two-bay mezzanine office floor. Project work to include a framing plan for both the industrial building and the mezzanine, an approximate design of structural frame elements, columns and beams. Introduction to available sections in structural steel used in the design of frame elements (Indicative).
- **Introduction to National Building Code:** IS 800: Criteria & Design to satisfy ECBC and National Building Codes and Standards, Dead and Live load calculations as per IS875 (Part1&2). Determine the general loads to be considered in the design of the structure, based on the type of occupancy for each area specified.
- **Rigid Frames design-1:** Properties of Indian standard rolled steel section and general framing arrangement of beams and columns for the one story 18M X 48m industrial building.
- **Rigid Frames design-2:** Design of Rigid frame including selection of frames according to the span, spacing and frame configuration using steel manuals.
- **Composite Flooring Systems:** Discussion on steel-concrete composite construction using steel beams, metal decking and concrete, including the role of shear connector's attachment to the beam for composite action.
- **Composite flooring systems design for mezzanine:** Loading and Analysis (Moment diagram to be provided) and design of composite steel decking with concrete topping.

- **Rigid frame elements design-1:** Steel Structural Column design using IS special publication for the design of steel structures [SP-6 (1)].
- **Rigid frame elements design-2:** Steel Structural Beams and trusses design using IS special publication for the design of steel structures [SP-6 (1)].

NOTE:

a. Relevant case studies and literature studies can be given by the studio teachers and report has to be compiled by the students.
b. Site visits to be arranged by studio teacher.
c. Miniature models should be to understand each of the structures.
d. A hands-on construction can be held for any of the modules.

REFERENCE BOOKS:

1.	Francis D.K. Ching.	'Building Structures Illustrated', John Wiley and sons, Inc. 2nd Edition, 2013, ISBN: 978-1-118-45835-8.
2.	Martin Bechthold and Daniel L Schodek	STRUCTURES, Pearson Education, New Delhi. 7th Edition, 2014, ISBN (13): 978-0-13-255913-3, ISBN (10):0-13-255913-3
3.	Robers A Heller and Deborah J Oakley	Salvadori's Structure in Architecture - Pearson Education, New Delhi. 4th Edition, 2017, ISBN (13): 978-0-13-280320-5, ISBN (10):0-13-280320-8
4.	Bureau of Indian Standards (BIS)	National Building Code of India (NBC 2016-SP-7).

Course Outcomes: After the completion of this course, students will be able to:

1. **Comprehend** the steel structural systems and choose the appropriate system for a given architectural project.
2. **Elucidate** the principles, concepts and thumb rules involved in the design of composite flooring systems in buildings.
3. **Apply** structural concepts and relevant building codes (IS) to design a rigid frame structures.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3	3												3		
	CO2	3											3		3		
	CO3			3									3		3		

HISTORY OF ARCHITECTURE - V

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	5ATT01	Exam mode	:	Theory

Course Objectives: This course will enable students to:

1. Understand key architectural styles from the Renaissance to Modern architecture.
2. Get introduced to the social, economic, and technological impacts of the Industrial Revolution on architectural forms and building technologies.
3. Examine the contributions of major architects and movements in shaping modern architecture.
4. Develop an appreciation of architectural innovations across different regions highlighting its cultural significance.
5. Encourage critical thinking about the evolution of architectural design principles in response to changing societal needs and technological advancements.

UNIT I

Introduction to Renaissance Architecture: Background and influences on Renaissance Architecture. Characteristics of Renaissance Architecture in general. Renaissance Architecture Examples: St Andrea, Mantua and Palazzo Rucellai by Leon Alberti, Villa Rotunda (Capra) by Palladio, (New) St Peters' Rome by Michelangelo and others, St Paul's London by Sir Christopher Wren.

Baroque Architecture: General characteristics of Baroque. Eg: St Peters' Piazza by Bernini.

1750-1900 Transitional Period Architecture: A brief account of the situation before the changeover to Modern architecture in Europe. Palladian Revival in Britain, Greek revival and Gothic Revival. Transitional Period Examples: Chiswick House, London, Mere worth castle, Kent, St Pancras Church, London, West Minister Palace, London, Arc de Triomphe, Paris. **09 Hrs**

UNIT II

Impact of Industrial Revolution in Europe: The Social, economic and political changes effected, new requirements, functions, new materials and technological developments. New proto types- Ex. Bridges, Expositions, Factories and Railway stations-Use of metal and glass.

Early Modern Architecture: Modern movement-Arts and crafts, Art-Nouveau, Italian futurism, Destijl movement; The Chicago School and rise of early sky scrapers; Louis Sullivan - Monadnock building, Casa Mila, Sagrada Familia church, Schroder House. **09 Hrs**

UNIT III

Modern Architecture I: Influence of concepts and ideas generated by FL Wright – Influence of Prairie style, Organic architecture; Robie House, Falling Waters, Guggenheim Museum, Johnson Wax Tower. Influence of concepts and ideas generated by Le-Corbusier - Idea of Purism, Expressionism, Brutalism and Five points of architecture; Villa Savoy, Unite de Habitation, Ronchamp Church. Influence of concepts and ideas generated by Mies Van Der Rohe – Minimalism, Less is more; Glass and steel tower – Seagram building, Barcelona Pavilion, Farnsworth house.

Modern Architecture II: Influence of concepts and ideas generated by Walter Gropius - Functionalism, Bahaus building, Fagus shoe Factory. Louis Sullivan – Form Follows Function, Chicago Auditorium, Wain Wright Building, Carson pierre Scott store, Alvar Aalto- Paimio Sanitorium. **09 Hrs**

UNIT IV

Modern Architecture III: International style, works of Eero Sarinen- TWA and Kennedy Airports. Richard Neutra- Lovell Beach House. Phillip Johnson- Glass House, Museum Building. Oscar Niemeyer-Work in Brazilia-Legislature building and Church.

Modern Architecture IV: New Ideas – Archigram Britain-Walking City, Floating City etc. Kenzo Tange- Japan-Floating City and Shimbon Office Building. Moshe Safdie- Housing in Isreal. Sir BuckMinster Fuller-US Pavilion in Expo-67, Dymaxion Car, Bucki Dome. **09 Hrs**

UNIT V

Modern Architecture V: Brutalism- Works of Peter and Allison Smith, James Sterling-Use of Raw concrete, Nun's Quarters-Lyon, Library-Oxford University, elementary School by Smithsons- development of Corporate Sky Scrapers- New York- Having multiple uses and tinted glass cladding, Rock Feller Centre-New York.

Modern Architecture VI: Parallel movement-Soviet Union of 1920's- Constructivist movement, Modernism and works of Vladimir Tatlin- contributions of Engineers like Pierre Luigi Nervi- Rome Olympic Buildings, Pirelli Tower Italy, Gustave Eiffel-Eiffel Tower, bridges, Statue of Liberty base, Candela etc. **09 Hrs**

NOTE:

a. Assignments to include the study of concepts relating to cultural and religious beliefs and structure.
b. Models, sketches and analytical studies can be carried out individually or in groups.

REFERENCE BOOKS:

1.	Kenneth Frampton	Modern Architecture: A Critical History, Thames & Hudson, 2007, ISBN: 9780500203958, 0500203954
2.	Sir Banister Fletcher	Sir Banister Fletcher's Global History of Architecture Volume 1, 2020, Bloomsbury Visual Arts, ISBN: 9781472527882, 1472527887
3.	Sigfried Giedion	Space, Time and Architecture: The Growth of a New Tradition, Fifth Revised and Enlarged Edition, 1967
4.	Sarbjit Bahga, Surinder Bahga, Yashinder Bahga	Modern Architecture in India : Post-independence Perspective, Galgotia Publishing Company, 1993 ISBN: 8185989001, 9788185989006
5.	Vikram Bhatt, Peter Scriver	After the Masters, Mapin Publishers, 1990 ISBN: 9780944142196, 0944142192
6.	Kenneth Frampton	A Genealogy of Modern Architecture - Comparative Critical Analysis of Built Form; Lars Müller Publishers, 2015, ISBN: 9783037783696, 3037783699

Course Outcomes: After the completion of this course, students will be able to:

1. **Identify** the characteristics of Renaissance, Baroque, transitional, and modern architectural styles.
2. **Demonstrate** knowledge of how industrialization influenced architectural materials, construction techniques, and building typologies.
3. **Analyse** the philosophies and key works of influential architects and their impact on modern architecture.
4. **Evaluate** architectural innovations from diverse movements recognizing their cultural and technological significance.
5. **Apply** historical knowledge to articulate the progression and transformation of architectural design concepts in response to societal changes.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs											PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3														3	
	CO2	3														3	
	CO3	3														3	
	CO4	3														3	
	CO5	3														3	

BUILDING SERVICES - III
(Air Conditioning, Mechanical Transportation and Fire Protection)

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	5ATT02	Exam mode	:	Theory

Course Objectives: This course will enable students to

1. Get introduced to the importance of mechanical services in buildings
2. Develop the knowledge about various mechanical services and their integration with architectural design.
3. Impart the knowledge of fire safety in buildings and the role of architect in providing fire safety measures.

UNIT I

Social and Environmental Issues related to conventional Refrigeration and Air-conditioning: Climate Change and energy poverty implications of energy consumption and refrigerants use by conventional Vapor-Compression based RAC technologies, role of air conditioning in accelerating fossil fuel extraction and precipitting the humanitarian injustices of the exploitative coal mining economy, Global and Indian environmental, energy efficiency and green building policies, laws and rules warranting a trajectory shift in the RAC economy, introduction to Thermal comfort as an 'ends' and cooling systems as a 'means', Socio-economic and environmental benefits of a Negawatt approach to energy conservation vs. a Megawatt approach towards power generation.
Introduction to Mechanical Ventilation: Need for mechanical ventilation for spaces like Basements, Kitchen, Toilets, etc. Guidelines as per NBC / ISHRAE: Types of ventilation systems. **09 Hrs**

UNIT II

Introduction to Systems for Thermal Comfort: Psychrometric processes for achieving thermal comfort, Direct and Indirect Evaporative Cooling (Sensible Cooling), Air-conditioning (Cooling and Dehumidification), Air & Refrigeration cycles, Basics of Load Calculations, Zoning and Air Distribution, Heating system.
Cooling System Design Process: Integrated building cooling system design - exploring the hierarchy of priority between thermal load reduction, passive cooling, low carbon cooling technologies and renewable energy integration. Methodology for selecting climate and context appropriate sustainable cooling system: i.e. selecting the optimal (a combination of) cooling technologies with lowest environmental impact and life-cycle cost from direct/indirect evaporative cooling, radiant cooling, structure cooling, solar VAM air conditioning or natural-refrigerant based

vapor compression air conditioning through: tools for predicting thermal comfort in buildings, principles and tools for climate analysis, psychrometric processes of conventional and sustainable cooling technologies and representation on psychrometric chart. **09 Hrs**

UNIT III

Climate Friendly Cooling Systems

a) Direct and Indirect Evaporative Cooling Systems: Estimating supply air temperature of direct and indirect evaporative cooling systems, calculating water requirements and cooling effect ('equivalent tonnage') of estimating air handling unit requirements, air flow rate and fan power requirements for evaporative cooling systems, estimating energy and climate impact benefits, understanding hybrid evaporative + vapour compression air conditioning systems.

b) Structure and Radiant Cooling Systems: Estimating thermal comfort conditions and operative temperature achieved, calculating radiant surface area or structure cooling coil length requirements, calculating cooling effect ('equivalent tonnage'), estimating air handling unit requirements for dedicated outdoor air system (DOAS), understanding spatial design implications and civil-work requirements for various radiant/structure cooling variants, estimating energy and climate impact benefits, understanding hybrid structure/radiant cooling + vapour compression air conditioning systems.

c) Climate Polluting Air Conditioning systems: Conventional Window, Split, Packaged, Basics of Centralized Air- conditioning system, Water & Air Cooled Chillers, Air Handling Units, Basics of duct sizing and routing, preferred locations of equipment and Architectural Requirements of various equipment. Illustration of duct layout through a small example. Specialized Air Conditioning Systems: Clean Rooms, Server, Hub & UPS Rooms, Operation Theatres etc. **09 Hrs**

UNIT IV

Mechanical Transportation systems in buildings

Elevators: Types of Elevator systems, design considerations like Peak Handling capacity, Average Waiting Time, Lift speed etc., Architectural Requirements & Details for Elevator shaft - Elevator pit - Elevator Machine Rooms, Automatic Rescue Device for Elevators , Elevator car interiors, Possible Location and arrangements of Elevators in a building. Lift Acts and National Building Code.

Escalators & Travelators: Applications, Calculation of Traffic capacity, Location and arrangements of escalators and travelators, inclination factor. **09 Hrs**

UNIT V

Fire safety in buildings & passive fire protection

Introduction: Classification of fire, causes & hazards; Grading of structural elements for its fire resistance as per NBC. Classification of building types as per NBC and brief description of characteristics of combustible and non-combustible materials.

Concepts in passive fire protection in buildings: Escape routes, fire driveways, fire refuge area, fire assembly areas, pressurization, travel distance, fire tower and compartmentation, fire signages. Active fire control using portable extinguishers. Basic concepts in fixed fire-fighting installations. Automatic fire detection and alarm systems etc.

National Building Code Requirements for Fire Safety: Rules for Fire Protection and Fire Fighting Requirements for High Rise Buildings in India. **09 Hrs**

NOTE:

a. The subject teacher could arrange for visits to relevant facilities to provide an understanding of the various provisions and integration of air conditioning, vertical transportation and fire safety in buildings. Case study reports could be submitted as group assignments.

b. Conceptual design of air-conditioning systems, mechanical ventilation, mechanical transportation, active & passive fire fighting systems for a high rise building.

REFERENCE BOOKS:

1.	Roy J Dossat.	'Principles of Refrigeration'5th Edition,2001, ISBN: 9780471052715, 047105271X
2.	Manohar Prasad.	'Air Conditioning and Refrigeration Data Hand book'3rd Edition New Age International Publishers
3.	Dom Kundwar	'Refrigeration and Air Conditioning', 2016

4.	V.Paul Lang	'Principles of refrigeration and AC'5th Edition,1995
5.	Walter T. Grondzik, Alison G. Kwok, Benjamin Stein, John S. Reynolds	Mechanical and Electrical Equipment for Buildings, Wiley, 2011, ISBN: 9781118039403, 1118039408
6.	Indian Standards Institution (ISI).	"National Building Code of India (NBC)", 2016, Bureau of Indian Standards
7.		IS Codes - • 1391 (Part 1 & 2) : 1992 - Specification for room air conditioners • 8148 : 2003 - Specification for packaged air conditioners • 4591 : 1968 - Code of practice for installation and maintenance of escalators • 14671 : 1999 - Hydraulic lifts • 14665 : 2000 - Traction lift • 15259 : 2002 - Home Lifts • 15330 : 2003 - Lifts for handicapped persons; IS codes for Fire Services

Course Outcomes: After the completion of this course, students will be able to:

1. **Elucidate** the importance of ventilation and its impact.
2. **Evaluate** thermal comfort parameters and choose appropriate cooling systems.
3. **Develop** the ability to assess and compare conventional and sustainable cooling technologies.
4. **Apply** standards to design a reliable, safe and efficient vertical transportation system.
5. **Identify** fire safety measures involved in building design.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3													3		
	CO2	3	3												3		
	CO3	3		2									3		3		
	CO4	3											3		3		
	CO5	3													3		

SOCIOLOGY & BUILDING ECONOMICS

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Practical Hours	:	--	SEE Marks	:	50
Course Code	:	5ATT03	Exam mode	:	Theory

Course Objectives: This course will enable students to:

1. Get introduced to the basic concepts of sociology and economics and their influence on architecture.
2. Develop sociological imagination that will rethink to how social systems operate through individuals in relation with space and building typologies.
3. Gain a comprehensive understanding of Urbanization and migration and social problems associated with these transformations in the urban settlements.
4. Get introduced to the concepts of social research, data sources and analysis.
5. Familiarize with the basics of economics, factors of production, consumer behavior with respect to architecture.

UNIT I

Introduction to Sociology: Definition of Sociology; Nature, Scope and Utility of Sociology; Branches of Sociology; Relation of Sociology and its branches to architecture and the built environment. Elements of Society: Biosocial and Socio cultural associations; Definitions of sociological terms: society, community, family, culture; Difference between society and community; Different family structures and architectural responses to different family types in

and outside India (examination of different housing typologies responding to different family types – traditional and contemporary); Relation between culture and built form. **09 Hrs**

UNIT II

Communities: Origin, growth and nature of settlements and communities. Their characteristics and spatial patterns.
Urban and Rural Communities: Definitions of the terms "urban" and "rural". The social, economic, ecological and spatial characteristics associated with urban and rural settlements Social, ecological and economic relations and interdependencies between urban and rural settlements. Urban sociology and rural sociology.
Cities and Society: Urbanization – definition; causes and effects (exploring social, and economic factors influencing migration to urban areas). Effects of urbanization on rural areas. Impact of growing urbanization on urban life, viz. health, housing, transportation. Different types of migration. The impact of migration on urban form. The origin and characteristics of slums in European, American and Indian cities. Official definition of slums as per Census of India. Understanding cities as socio-ecological systems. Governmental and non-governmental approaches to engaging with issues regarding slums in Indian cities. **09 Hrs**

UNIT III

Social Research: The need for research; the research process; ethics of social research; scope of social research. Difference between methodology and methods. Types of research methods: qualitative, quantitative, mixed research methods. Sources of research data: primary and secondary sources. Secondary data sources include literature review, official and unofficial documents. Primary data sources use methods such as field surveys, questionnaires, different types of interviews (open-ended / closed / structured / semi- structured), Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal techniques and case study approach.
Economics: Definition of economics; Definitions of terms: Goods; Utility, Value, Price and Wealth. The relationship of economics with the built environment and land use. **09 Hrs**

UNIT IV

Economic organization of society: Different economic systems: capitalism; socialism, communism, mixed-economies. Primary, secondary and tertiary sectors of economy: agriculture, mining, manufacturing, banking, marketing, transport and service sectors. Factors of production: land, labour, capital and entrepreneurship. Relevance of factors of production to architecture and construction practice.
Economics and the market: Production and Consumption, wants and needs and their characteristics. Concepts of economics: Opportunity cost; Laws of supply and demand; Laws of increasing, diminishing and constant returns; Standard of living. Analysis of the housing market in Indian cities to understand the dynamics of urban/affordable housing supply and demand in formal and informal settlements. **09 Hrs**

UNIT V

Urban land values: Various social, ecological, and economic factors affecting the value of urban land in formal and informal spaces. Difference between land use and land cover. Studying the characteristics of developed land in the city and real estate development vision prevailing in cities. The Bid Rent theory that defines the relationship between location and land value. Theoretical city models based on land use and land value.
Building Costs: Cost and cost indices. Total cost of construction. Time value of money. Different sources of financing for buildings. **09 Hrs**

REFERENCE BOOKS:

1.	Neil J Smelser & Richard Swedberg	'The Handbook of Economic Sociology: Second Edition', ISBN 13: 978-0691121260, 2nd edition, Princeton university press, 2005
2.	Paul A. Samuelson, William D. Nordhaus	Economics, McGraw-Hill Education, 2009, ISBN: 9780073511290, 0073511293
3.	Robert K. Yin	Case Study Research and Applications: Design and Methods, SAGE Publications, 2017, ISBN: 9781506336176, 1506336175
4.	Linda N. Groat, David Wang	Architectural Research Methods, Wiley, 2013, ISBN: 9781118418512, 1118418514
5.	Paul Jones	The Sociology of Architecture : Constructing Identities, Liverpool University Press, 2011, ISBN: 9781846310775, 1846310776
6.	Werner Z. Hirsch	'Urban Economic Analysis', ISBN 13: 978-0070290440, McGraw Hill US Inc., 1973

Course Outcomes: After the completion of this course, students will be able to:

1. **Identify** the elements of society and their impact on architectural design.
2. **Explore** the nature of social institutions that shapes the social structure.
3. **Appraise** the types and procedures of social research and basic terminologies of economics.
4. **Differentiate** between the different economic organizations of society and elucidate laws of economics.
5. **Analyze** the impact of standard of living on the spatial quality of built spaces and time value of money.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	2												2			
	CO2	2												2			
	CO3	2												2			
	CO4	2												2			
	CO5	2												2			

PROFESSIONAL ELECTIVE - III

Contact Hours/Week	:	02	Credits	:	2.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	30	SEE Marks	:	50
Course Code	:	5ATPE	Exam Mode	:	Viva

ATPE07: Alternative Building Technologies

Course Objectives: This course will enable students to:

1. Gain insight into the different alternative cost-effective technologies available in modern context.
2. Strengthen the understanding of various appropriate technologies and systems as evolved over time.

COURSE OUTLINE:

Strengthen knowledge and understanding of appropriate technologies and cost-effective technologies, Technologies as evolved from contexts through the practice of international architects and Indian architects; Systems and techniques developed in research labs, etc. correction, and excellent printing output.

ATPE08: Product Design

Course Objectives: This course will enable students to:

1. Get familiarize with the concept of form and space in product design.
2. Recognize the relationship between form and material and the process of manufacture.

COURSE OUTLINE:

Concept of form and space in product design; Relating Form to Materials and Processes of Manufacture. Creativity techniques; product detailing and manufacture; exploratory mock-up models for concept development, refinement and detailing; product design prototyping and advanced manufacturing processes.

ATPE09: Environmental Responsive Architecture

Course Objectives: This course will enable students to:

1. Develop awareness and familiarity with green design.
2. Integrate the principles of energy conservation in Architectural design.

COURSE OUTLINE:

Green Buildings - Rating Systems - Site Specific Design; Development Density and Community Connectivity, Alternative Transportation, Site Development, Storm water Design and Heat Island Effect. Optimization of Energy Performance, On-site Renewable Energy, Enhanced Commissioning and Green Power. To apply the principles of Solar Passive Architecture to design of buildings. Building Reuse: Maintain Existing Walls, Floors, and Roof, Construction Waste Management, Materials Reuse, Recycled Content, Regional Materials and Certified Wood. Construction Indoor Air Quality Management Plan and Daylight and Views. Rating Systems: GRIHA and LEED

Systems. To provide incentive for project teams to address geographically significant environmental local issues. Introduction to passive techniques of cooling such as evaporative cooling, earth tubing, wind scoops, roof ponds, shaded courtyards etc.

Course Outcomes: After completion of course, Students would be able to:

1. **Apply** desired knowledge and skill in a particular domain of Architecture.
2. **Analyze** the processes required for the particular subject.
3. **Develop** an expertise in the chosen field for career enhancement.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs											PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3											3	3			
	CO2	3											3	3			
	CO3	3											3	3			

Physical Education
(Sport &Athletics/Yoga & NSS)

Contact Hours/Week	:	02	Credits	:	0.0
Total Lecture Hours	:	-	CIE Marks	:	100
Total Practical Hours	:	30	SEE Marks	:	--
Course Code	:	NMC02-AT	Exam Mode	:	--

SIDDAGANGA INSTITUTE OF TECHNOLOGY
Tumakuru-572103

(An Autonomous Constituent Institution of Visvesvaraya Technological University, Belagavi)

SCHOOL OF ARCHITECTURE

DETAILED SYLLABUS FOR
SIXTH SEMESTER
B. ARCHITECTURE

ARCHITECTURAL DESIGN - V

Contact Hours/Week	:	08	Credits	:	8.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	120	SEE Marks	:	50
Course Code	:	6ATS01	Exam Mode	:	Viva

Course Objectives: This course will enable students to:

1. Understand the role of built environment by intrinsic factors like size, volume, levels, functional spaces or zones, structural possibilities.
2. Analyze the impact of external factors such as site, approach, traffic, climate change, ecology, services on architectural design.
3. Create an 'Identity' to the Campus through integration of intrinsic and external factors.

COURSE OUTLINE:

- The studio shall explore the idea of spatial structuring as a set of logical operations after an analytical understanding of the site, surroundings, program and intent expressing diversity of program and its resulting spatial variety and the relationship between the built and the unbuilt established through movement systems ,linkages and nodes etc.
- Institutional projects like facilities of higher learning, such as, Engineering college campus, medical college campus, management institute campus, hotel management institute, Law college campus, Dental college campus, Nursing college campus, Juvenile Correction Centre, etc.
- The project and design development should focus on integrating sustainable design in every aspect and process possible, with an emphasis on reducing thermal locals and integrating ventilation, insulation, thermal mass, shading, cool roofs, passive/natural cooling and low energy, low-carbon active cooling technologies; local materials as much as possible; sustainable systems such as storm water harvesting, water recycling and reusing, waste management systems and renewable energy systems and above all response to site context and existing informal systems.

NOTE:

a. Relevant case studies and literature studies can be given by the studio teachers and reports must be compiled by the students.
b. A minimum of two architectural projects must be tackled in the semester.
c. One of the design exercises can be carried out as group work to explore possibilities of students working as teams.
d. Vertical studio involving other semesters can be encouraged to carry out one full or part project.
e. The portfolio covering the above topics shall be presented viva voce.
f. Projects to be presented with the help of drawings, sketches, and models. Application of techniques learnt in architectural presentation must be incorporated.
g. Knowledge of the alternative materials and techniques taught in building construction can be incorporated into design and detailing.
h. The projects listed in the syllabus are only to state the scale and complexity. The projects of similar scope can be introduced by the teachers.

REFERENCE BOOKS:

1.	Roger H. Clark, Michael Pause	Precedents in Architecture, Van Nostrand Reinhold, 2007, ISBN: 9780442020514, 0442020511
2.	Geoffrey H. Baker	Le Corbusier: An Analysis of Form, Van Nostrand Reinhold, 1996, ISBN: 9780471288138, 0471288136
3.	Herman Hertzberger	Lessons for Students in Architecture, 010 Publishers, 2001, ISBN: 9789064504648, 9064504644
4.	Rem Koolhaas, Sanford	Rem Koolhaas: Conversations with Students · Issue 30, Princeton Architectural Press, 1996, ISBN: 9781885232021, 1885232020

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Course Outcomes: After the completion of the course, students will be able to:

1. **Analyze** the influence of climate, context, socio-cultural factors and material technology on the evolution and functioning of institute.
2. **Articulate** the given program and its relationship with the context integrating the knowledge of various building systems.
3. **Create** an institute with distinctive character and student friendly environment.
4. **Design** and detail various structural, services required for the project.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs											PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1		3											3			
	CO2				3									3			
	CO3			3		3		3			3		3	3			
	CO4			3		3					3		3	3			

BUILDING MATERIALS AND CONSTRUCTION - VI

Contact Hours/Week	:	04	Credits	:	4.0
Total Lecture Hours	:	15	SEE Marks	:	50
Total Studio Hours	:	45	CIE marks	:	50
Course Code	:	6ATS02	Exam mode:	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with the construction systems and detailing of special doors, windows, partitions, structural glazing and cladding.
2. Get introduced to various skylights using steel and glass with their fixing details.
3. Understand the applications of advanced methods and smart materials for various building elements.

COURSE OUTLINE:

- **Glass as a building material** - Glass manufacturing in various types like plate, tinted, decorative, reinforced, laminated glass block, fibreglass, glass murals, partially coloured glass, etching of glass and its applications in building industry for both exteriors and interiors. Glass fabrication techniques, fibre reinforced composite materials and products. Qualitative and quantitative study of the material's contributions to increased building solar heat gain in the tropics, increased air conditioning load and hence artificial cooling energy needs, and inability to promote natural unassisted night-time cooling through spontaneous release of accumulated heat. Study the life cycle environmental impacts, carbon emissions and recyclability of Glass as a material used in building construction.
- **Frame-less glass doors and windows** - Fixing and Fabrication details.
- **Contemporary façade systems** - Fixing and fabrication details of Structural glazing, AC sheet cladding, composite panel cladding – aluminum and fundermax panels, thermal insulation façade.
- **UPVC and FRP doors, windows, partitions** - Detailing and study of joinery.
- **Skylight in steel and glass** - Principles and methods of construction and detailing.
- **Prefabrication in India** - Advantages and relevance in the Indian context. Design, analysis and manufacture processes.
- **Introduction to advanced methods of Building construction** - CAD /CAM fabrication and 3D printing. Analyze the larger impact of the advanced methods on the construction industry in Indian context.
- **High Performance Materials** - Smart Materials: Properties of Smart Materials, Applications in Building Industry. Nano Materials: Introduction to Nanotechnology in building materials, Applications in Building Industry.

NOTE:

a. Minimum one plate on each construction topic and study of material in the form of portfolio.
b. Miniature models to scale should be done for the construction related topics.
c. Site visits / case studies on related topics to be arranged by studio teachers and report to be compiled by students.
d. Market survey of materials should be carried out by students.
e. The entire portfolio on construction and materials shall be presented for viva voce.

REFERENCE BOOKS:

1.	Mr Roy Chudley & Roger Greeno	Construction Technology, Edition 4, Prentice Hall, 2009 ISBN : 0131286420, 978-0131286429
2.	S. C. Rangwala	Engineering Materials [Material Science], Charotar Publishing House Pvt. Limited, 2008ISBN : 9788185594965, 8185594961
3.	William Barr McKay	Building Construction, Fourth edition, Routledge, 2004 ISBN : 1873394721, 9781873394724
4.	Roy Chudley, Roger Greeno	Advanced Construction Technology, Pearson Prentice Hall, 2006 ISBN : 9780132019859
5.	G. D. Taylor	Materials in Construction, CRC Press, 2013 ISBN : 9781317879022, 1317879023
6.	Arthur Lyons	Materials for Architects and Builders, Routledge, 2014 ISBN : 0415704979, 9780415704977

Course Outcomes: After the completion of the course, students will be able to:

1. **Apply** the construction details of upvc doors and windows.
2. **Explore** the possibilities of contemporary façade systems.
3. **Apply** the details of skylight systems.
4. **Explore** the types and application of glass in construction industry**.**
5. **Elucidate** the knowledge of smart materials in building industry.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs											PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3									3		3		3		
	CO2	3									3		3		3		
	CO3	3									3		3		3		
	CO4	3											3		3		
	CO5	3											3		3		

WORKING DRAWING - I

Contact Hours/Week	:	04	Credits	:	4.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	60	SEE Marks	:	50
Course Code	:	6ATS03	Exam Mode	:	Viva

Course Objectives: This course will enable students to:

1. Recognize the importance of creating working drawings for construction execution.
2. Illustrate the essential components of working drawings, notations & drawing standards.
3. Prepare detailed set of drawings for building elements.

COURSE OUTLINE:

- **Introduction to working drawing** - its purpose and importance in building construction. Methods of representing various contents & specific information in working drawings. Study of building bye-laws and preparation of sanction drawings.
- **Preparation** of center-line drawing, excavation drawings, foundation/footing drawings and working plans, elevations and sections.

- **Detailing** of various building elements like Staircases, railings and skylights, etc. Schedule of openings and door-window details.
- **Services** – Preparation of MEP drawings and structural drawings using advanced methods in Revit. Flooring, tiling and dadoing details. Interior Details of Toilet and Kitchen layout etc.,
- **Site detailing** - Site plan showing water supply, sewage layout and site drainage.

NOTE:

a. One design project handled in the earlier semester can be chosen to execute complete set of working drawings.
b. Studio teachers can arrange for construction site visits for field supervision.

REFERENCE BOOKS:

1.	Mario Carpo	The Working Drawing: The Architect's tool, Park Books, 2016, ISBN-10: 3906027317, ISBN-13: 978-3906027319
2.	Keith Styles	Working Drawings Handbook, Taylor & Francis, 2012
3.	Ernst & Peter Neufert	Nuferts Standards, Wiley & Sons, 4th edition, 2012, ISBN-10: 9781405192538, ISBN-13: 978-1405192538

Course Outcomes: After the completion of this course, students will be able to:

1. **Develop** architectural drawings, sanction drawings, and working drawings.
2. **Design and develop** detailed drawings of various building and site elements.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3				3											3
	CO2										3		3				3

STRUCTURAL ANALYSIS - III

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	15	CIE Marks	:	50
Total Practical Hours	:	30	SEE Marks	:	50
Course Code	:	6ATS04	Exam mode	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with concepts of high-rise structures.
2. Get introduced to various structural systems adaptable for resisting lateral loads.
3. Study structural properties and application of long span truss systems.

COURSE OUTLINE:

- **Introduction**: Horizontal or Long Span Structures.
- **Introduction to the Structural design Project:** Design for an Airport terminal building of dimension 75M X 300M using horizontal system. Selection of Horizontal structural systems including load calculation based on Building Codes and Standards (indicative).
- **Structural Analysis and Design to satisfy Building Codes and Standards:**Determine the general loads to be considered in the design of the structure, based on the type of occupancy specified for each area. a) Gravity loading: Dead and Live load calculation based on IS 875 (Part 1&2) b) Seismic loading: Seismic loading calculation based on IS 1893 Code Static Analysis Procedure c) Wind loading: Wind loading calculation based on Indian Standard I.S. 875 (Part3).
- **Design of Portal frame Structure System:** Design of two-dimensional rigid frames that have a rigid joint between column and beam. General framing arrangement of Portal frame for 75M X 300M building, basic load path and total structural weight calculation.

- **Design of Arch and Vault Structures:** Design of curved structural member spanning two points, of masonry, concrete or steel and used as the roofing systems of large span buildings. Design of Arch and Vault arrangement for spanning 75M X 300M building, and basic load path and total structural weight calculation.
- **Design of Dome Structures:** Domes as polar arrays of curved structural systems in masonry,concrete, steel with glass cladding, their structural strength and properties as roofing systems of large column-free spans. Design of dome(s) for spanning 75M X 300M building, basic load path and total structural weight calculation.
- **Long Span Planar Truss Design:** Triangular structural system; assembly of simple triangular planar trusses. Planar trusses in roofs and bridges. General framing arrangement of Long Span Truss for 75M X 300M building, and basic load path and total structural weight calculation.
- **Vierendeel truss design:** Truss design with rectangular or square assembly of members with rigid joints capable of resisting bending moments. General framing arrangement of Vierendeel truss for 75M X 300M building, and basic load path and total structural weight calculation.
- **Cable and Suspension Structures:** Design for long-span systems using Cable and suspension systems. Design cable suspended roof to span 75M X 300M building, and basic load path and total structural weight calculation.
- **Space Truss:** Design of three dimensional trusses, their structural properties and strength due to three dimensional triangulation. Design of Space Truss roof for spanning 75M X 300M building, and basic load path and total structural weight calculation.
- **Concrete Shell structure design:** Design of double curved surfaces formed from warped surface (e.g. hyperbolic parabolic); their properties and strength as lightweight construction for column free large spans. Design of Concrete shell roof to spanning 75M X 300M building, and basic load path and total structural weight calculation.
- **Fabric Structure:** Design of membrane structures of thin flexible fabric covers that provide light weight free-form roofing system. Design of Fabric roof to span 75M X 300M building, and basic load path and total structural weight calculation.

NOTE:

a. Relevant case studies and literature studies can be given by the studio teachers and report has to be compiled by the students.
b. Site visits to be arranged by studio teacher.
c. Miniature models should be made by students to analyse each of the structural systems.

REFERENCE BOOKS:

1.	Francis D.K. Ching.	'Building Structures Illustrated', John Wiley and sons, Inc. 2nd Edition, 2013, ISBN: 978-1-118-45835-8.
2.	Martin Bechthold and Daniel L Schodek	STRUCTURES, Pearson Education, New Delhi. 7th Edition, 2014, ISBN (13): 978-0-13-255913-3, ISBN (10):0-13-255913-3
3.	Robers A Heller and Deborah J Oakley	Salvadori's Structure in Architecture - Pearson Education, New Delhi. 4th Edition, 2017, ISBN (13): 978-0-13-280320-5, ISBN (10):0-13-280320-8
4.	Bureau of Indian Standards (BIS)	National Building Code of India (NBC 2016-SP-7).

Course Outcomes: After the completion of this course, students will be able to:

1. **Comprehend** various types of lateral structural systems based on their application.
2. **Explain** the principles, concepts and thumb rules involved in the design of high-rise structural systems.
3. **Apply** the principles, concepts and thumb rules involved in the design of long span truss and vierendeel truss.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3													3		
	CO2	3	2	2		1									3		
	CO3	3	2	2		1									3		

CONTEMPORARY ARCHITECTURE

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	6ATT01	Exam Mode	:	Theory

Course Objectives: This course will enable students to:

1. Extrapolate the contribution of eminent architects post-independence.
2. Study Ideas and philosophies of renowned International Architects.
3. Identify the contribution of various architects in shaping the built environment through their noted works.
4. Draw inspiration from Innovative design ideas and use of new materials and technology by eminent architects.
5. Sensitize towards the context and climate-responsive ideas in designing buildings.

UNIT I

Architecture in India (Pre independence): The Architecture of the Princely States of Jaipur, Bikaner and Mysore: Their city examples – clock towers, railway stations, public offices, assembly halls, water systems, public hospitals, etc. Developing an environmental and vernacular expression connection in Pre independence architecture.

Architecture in India (Post-Independence): Works of public nature in Chandigarh and Ahmadabad (Legislative Assembly Complex including High Court, Legislative assembly and Secretariat, Chandigarh and Mill Owners Building, Ahmedabad), IIM, Ahmadabad and its significance.

Modern Architecture in India I: Ideas and works of BV Doshi (Institute of Indology, Ahmedabad, IIM-Bangalore and Hussain-Doshi Gufa, Ahmedabad) and Charles Correa: (Vidhan Bhavan, Bhopal, Jawahar Kala Kendra, Jaipur, Kanchenjunga Apartments, Mumbai and Kala Academy Panaji, Goa). **09 Hrs**

UNIT II

Modern Architecture in India II: Ideas and works of Raj Rewal (Pragati Maidan, New Delhi and Asian Games Village, New Delhi), Achyut Kanvinde (IIT, Kanpur and Nehru Science Centre, Mumbai), Uttam Jain(Lecture Theatres, Jodhpur and Engineering College, Kota).

Modern Architecture in India II: Enrichment of Indian experience- Cost effectiveness and local influences. Lauire Baker (Centre for Development Studies, Thiruvananthapuram and St. John Cathedral at Tiruvalla) and Anant Raje (IIFM, Bhopal and Management Development Centre, IIM-A). Bimal Patel (Sabarmati River front development at Ahmedabad and Kashi Vishwanath Corridor, Varanasi). Sanjay Mohe (Karunashraya, Bangalore, NIFT, Chennai, Anji Reddi Memorial, Hyderabad).

Parallel trends in Indian architecture: a) Revivalist- monumental, Religious. b) Experimental-Pondicherry, Belgium embassy, IITB, Sriram Centre, New Delhi. c) Vernacular influence-Cost effective concepts. **09 Hrs**

UNIT III

Last phase of Modern Architecture: Ideas and works of Richard Meier (Smith House, Connecticut and Getty Centre, Brent Wood, Los Angeles) and Charles Moore (Architect's Own House at Orinda and Piazza d'Italia, New Orleans), Bernard Tschumi (Kyoto Railway Station Project and Parc de la Villete, Paris).

High-tech architecture or Structural Expressionism I: An architectural style that emerged in the 1970s: The High-tech architecture practitioners include British architects Sir Norman Foster(Hong Kong Shanghai Bank and Renault Distribution Centre, Swindon, England), Sir Richard Rogers, Sir Michael Hopkins. **09 Hrs**

UNIT IV

High-tech architecture or Structural Expressionism II: The High-tech architecture practitioners include Italian architect Renzo Piano (Pompidou Centre, Paris and Menil Museum, Houston) and Spanish architect Santiago Calatrava (Lyon-Satolas Railway Station and Olympic Stadium at Athens).

Postmodern Architecture: Development of Postmodernism with its origins in the alleged failure of Modern architecture from 1950s, and spreading in the 1970s and its continuous influence on present-day architecture. Ideas and works of Michael Graves, James Stirling, Robert Venturi etc. **09 Hrs**

UNIT V

Hyper theories of Architecture I: Development of postmodern architecture in 1980s is the ideas of Deconstructivism including, Frank Gehry (AeroSpace Museum, Santa Monica and Guggenheim Museum, Bilbao).

Daniel Leibskind (Jewish Museum, Berlin and World Trade Centre, New York), Rem Koolhas(Dance Theatre, The Hague and Netherlands Sports Museum).

Hyper theories of Architecture II: Ideas of Deconstructivism including, Peter Eisenman, ZahaHadid (The Peak Club, Hong Kong and IBA Housing Block 2, West Berlin), works of Coop Himmelb(l)au and Bernard Tschumi in Deconstruction. **09 Hrs**

REFERENCE BOOKS:

1	Richard Meier	Richard Meier, Architect, Vol. 4, Rizzoli publisher, 2004 ISBN - 10: 0847826333, ISBN-13: 978-0847826339
2	Sarbjit Bahga, Surinder Bahga, Yashinder Bahga	Modern Architecture in India : Post-independence Perspective, Galgotia Publishing Company, 1993 ISBN: 8185989001, 9788185989006
3	Vikram Bhatt, Peter Scriver	After the Masters, Mapin Publishers, 1990 ISBN: 9780944142196, 0944142192
4	Martin Pawley	Norman Foster: A Global Architecture (Architecture/Design Series), Universe publisher, 1999 ISBN - 10: 0789302632, ISBN-13: 978-0789302632
5	Renzo Piano & Kenneth Frampton	Renzo Piano: The complete Log book, Thames and Hudson Publisher, 2017 ISBN - 10: 9780500343104, ISBN-13: 978-0500343104
6	Bernard Tschumi	Architecture & Disjunction, The MIT Press Publisher, 1996 ISBN - 10: 0262700603, ISBN-13: 978-0262700603
7	Paul Goldberger	Building Art: The life & work of Frank Gehry, Knopf publisher, 2015 ISBN - 10: 0307701530, ISBN-13: 978-0307701534
8	Aaron Betsky	Complete Zaha Hadid: Expanded and Updated, Thames and Hudson Publisher, 2018 ISBN - 10: 0500343357, ISBN-13: 978-0500343357
9	Santiago Calatrava & Cristina Carrillo de Albornoz	Santiago Calatrava: Drawing, Building, Reflecting, Thames and Hudson Publisher, 2018, ISBN - 10: 0500343411, ISBN-13: 978-0500343418
10	Rem Koolhaas	Rem Koolhaas: Elements of Architecture, Taschen America Llc Publisher, 2018 ISBN - 10: 9783836556149, ISBN-13: 978-3836556149
11	Carter Wiseman	I M Pei: A profile in American Architecture, Harry N. Abrams publisher, 1990 ISBN - 10: 0810937093 ISBN-13: 978-0810937093

Course Outcomes: After the completion of this course, students will be able to:

1. **Elucidate** the works of Indian Architects Post-independence.
2. **Summarize** the development of modern architecture in India.
3. **Explore** the philosophies of world-renowned architects.
4. **Identify** the use of new materials and technology in architectural projects.
5. **Interpret** the philosophies and innovative technologies of eminent architects as inspiration in their design.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3														3	
	CO2	3														3	
	CO3	3														3	
	CO4	3														3	
	CO5	3														3	

BUILDING SERVICES - IV
(Acoustics & Noise Control)

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	6ATT02	Exam mode	:	Theory

Course Objectives: This course will enable students to:

1. Get introduced to basic terminologies associated with the sound and its properties.
2. Explain the behavior of sound in indoor and outdoor spaces.
3. List out the materials used in acoustical design.
4. Calculate the various acoustical parameters of enclosed spaces.
5. Identify the indoor and outdoor noise mitigation strategies.

UNIT I

Scope of Acoustics, Acoustical problem in contemporary Architectural Design, Sound Source, Path and Receiver. Properties of Sound Introduction to the study of acoustics - nature of sound, basic terminology - frequency, pitch, tone, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, masking, sound and distance - inverse square law.

Behaviour of sound in enclosed spaces - reflection of sound, nature of reflection from plane, convex and concave surfaces, sound diffraction, Absorption of sound, sound absorption coefficient, reverberation, reverberation time calculation. **09 Hrs**

UNIT II

Acoustical Tools and Measurements: Use of SLM (Sound Level Meter), AI (Articulation Index), STI (Speech-Transmission Index), Speech Intelligibility. Sound Attenuation. Absorption coefficients of acoustical materials, NRC value, NC Curves for various spaces.

Acoustical Materials: Vernacular methods of sound insulation, Porous materials, panel absorbers, membrane absorbers, acoustical plasters, diffusers, cavity or Helmholtz resonators. Role of functional absorbers, Adjustable acoustics and variable sound absorbers. Acoustical correction and retrofits to existing spaces. **09 Hrs**

UNIT III

Acoustical Design of Auditoriums - Multipurpose Halls: History of Greek, Roman theatres. Use of IS code 2526 - 1963 for design and detailing of Auditoriums - Cinema Halls - Multi- purpose Halls - Halls for speech and music. Acoustical Design and Detailing of Other Spaces – Open air theatres, Halls for Indoor Sports, home theatres, recording studios, open plan offices, etc. Need and use of sound reinforcement systems, sound masking systems and speech privacy. **09 Hrs**

UNIT IV

Introduction to environmental noise control: Noise, its sources and its classification - outdoor and indoor, airborne and structure borne, impact noise, noise from ventilation system, community and industrial noise. Noise transmission, Mass law and transmission loss. Maximum acceptable noise levels. Design Principles – reduction at source, reduction near source, etc.

Constructional measures of noise control and sound insulation -Enclosures, Barriers, Sound insulation (AC Ducts and plants), Vibration isolation – control of mechanical noise, floor, wall, ceiling treatment. Sound Isolation. Construction details of composite walls, double walls, floating floors, wood-joist floors, plenum barriers, sound locks, etc. STC (Sound Transmission Class) ratings. **09 Hrs**

UNIT V

Industrial noise: Sources of industrial noise - impact, friction, reciprocation, air turbulence and other noise. Methods of reduction by enclosures and barriers.

Introduction to Urban Soundscape – Introduction to Urban noise, Noise sources - Air traffic, Rail traffic, Road traffic, Seashore and inland. Traffic planning against outdoor noise. Noise reduction and control by Site planning, Town planning and Regional Planning consideration. Role of Architects / Urban Planners in shaping the urban soundscape. Sustainable design strategies in building acoustics. **09 Hrs**

NOTE:

a. Design exercises involving the above topics. (Minimum 2 exercises)
b. Outdoor and indoor design criteria.
c. Relationship of forms & shapes of plans with respect to sound.

REFERENCE BOOKS:

1.	M. David Egan	Architectural Acoustics, J. Ross Pub., 2007, ISBN: 9781932159783, 1932159789
2.	Leslie L. Doelle	Environmental acoustics, McGraw-Hill, 2007, ISBN: 9780070173422, 0070173427
3.	Vern Oliver Knudsen, Cyril M. jt. author Harris	Acoustical Designing in Architecture, Wiley, 1965, ebook.
4.	United States. Small Business Administration	Small Business Management Series, U.S. Small Business Administration., 1952

5.	David Egan	'Architectural Acoustics' ISBN 978-1932159783, J Ross Publishing; Illustrated edition (28 February 2007)
6.	Knudsen Ver	'Acoustical design in buildings' ISBN 978-0883182673, Acoustical Society of Amer (1 June 1980)
7.	Patrich Peter	'Acoustics – Noise and Buildings' ISBN 978-1135712778, John Wiley & Sons Inc (1 December 1950)
8.	National Building Code of India	National Building Code of India (NBC) 2016; Part 8 Section 4 173rd EC dated 31.07.2023
9.		IS 1950: 1962 Code of practice for sound insulation of non-industrial buildings IS 3483: 1965 Code of practice for noise reduction in industrial buildingsIS 4954: 1968 Recommendations for noise abatement in town planning IS 11050 (Part 1) 1984: Rating of sound insulation in buildings and of building elements: Part 1 Airborne sound insulation in buildings and of interior building elements IS 11050 (Part 1) 1984: Rating of sound insulation in buildings and of building elements: Part 1 Airborne sound insulation in buildings and of interior building elements IS 11050 (Part 2)1984: Rating of sound insulation in buildings and of building elements: Part 2 Impact sound insulation IS code 2526: 1963Code of practice for acoustical design of auditoriums and conference halls

Course Outcomes: After the completion of this course, students will be able to:

1. **Elucidate** behavior of sound in indoor and outdoor environment and its effects on building design.
2. **Recognize** the indigenous acoustical materials and their applications.
3. **Apply** principles of acoustical design in detailing various performance and speech-oriented spaces.
4. **Develop** sensitivity in design towards external and internal noise mitigation.
5. **Explore** the urban soundscape elements and role of architects.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3	3												3		
	CO2	3													3		
	CO3		3	3											3		
	CO4			3				3							3		
	CO5	3						3					3		3		

LANDSCAPE ARCHITECTURE

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	6ATT03	Exam mode	:	Theory

Course Objectives: This course will enable students to:

1. The discipline of landscape architecture, its historical evolution, and contemporary relevance in ecological and sustainable design.
2. Develop an understanding of the relationship between architecture and landscape through site analysis, planning, and design integration.
3. Familiarize with the primary and secondary elements of landscape design and their application in creating functional and aesthetic outdoor spaces.
4. Study and critically analyze historical and cultural landscape philosophies and their influence on modern and contemporary landscape design.
5. Explore the works of notable international and Indian landscape architects to understand varying design approaches and contextual responses.

UNIT I

Introduction to the discipline of landscape architecture: Landscape as a broad terminology, Natural and Man modified landscapes. Brief history and the growth of landscape architecture as a design and planning profession from gardens to regional landscapes. Scope and nature of professional work in contemporary landscape architecture, Changing priorities of disciplinary approach: ecology, biodiversity and sustainability. **09 Hrs**

UNIT II

Relating Architecture and Landscape, Site analysis and Site planning: Study of architectural response to landscapes and understanding the relation between architecture and landscape through case examples. The idea of site as part of whole/larger landscape, Site inventory and analysis: physical, biological, social contextual studies and layers of site analysis, site suitability analysis, inferences and response for architectural interventions. Design considerations and approaches to site planning, site program, siting of buildings and open spaces, introduction to grading and land modifications, working with sloping sites. **09 Hrs**

UNIT III

Elements of landscape architecture and their application in landscape design: Primary landscape elements; Landform, water and vegetation, Design considerations and their role in articulating outdoor spatial design. Secondary landscape elements: Street furniture, landscape walls, paving, inert ground covers, trellis, outdoor shading structures, embellishments, etc. Design considerations and their role in spatial design. Hard and soft landscapes. **09 Hrs**

UNIT IV

Works of noted landscape architects and landscape projects: Eastern landscape philosophies: Chinese and Japanese gardens, Asian landscapes: Mughal and Persian gardens. Western landscape designs: Italian and French gardens, English romantic gardens and American parks.

Examples of Modern landscape architects: works of Garret Eckbo, Lawrence Halprin and Peter Latz. **09 Hrs**

UNIT V

Examples of contemporary landscape projects: works of Martha Schwartz, Maya lin, Peter Walker & Partners, Hargreaves Associates, Hedeo Sasaaki, SWA, Michael Van Valkenburgh, Andropogon Associates, Field Operations, Turenscape etc.

Landscape projects in India: works of Ravindra Bhan, Mohammed Shaheer, Prabhakar B Bhagawath etc. **09 Hrs**

NOTE:

a. Small scale landscape design project to be given as an assignment and/or activity.

b. Detailing such as roof garden, terrace garden, vertical garden has to be done as part of assignment.

REFERENCE BOOKS:

1.	John O Simonds	Landscape Architecture: A Manual of Site Planning and Design, McGraw Hill Education, 3rd Edition, 1997, ISBN-10: 0070577099, ISBN-13: 978-0070577091
2.	John L. Motloch	Introduction to Landscape Design, Wiley, 2000, ISBN: 9780471352914, 0471352918
3.	Tom Turner	Garden History: Philosophy and Design 2000 BC – 2000 AD, Routledge, 1st Edition, 2004, ISBN-10: 0415317487, ISBN-13: 978-0415317481
4.	John R Etherington	Environment and Plant Ecology, Wiley-Blackwell, 2nd Edition, 1982, ISBN-10: 047110146X, ISBN-13: 978-0471101468
5.	Brian Clouston	Landscape design with plants, Newnes, 2nd Edition, 2013, ISBN-13: 978-0434902347
6.	Ian McHarg	Design with Nature, John wiley & sons Inc, 1995, ISBN-10: 047111460X, ISBN-13: 978-0471114604
7.	Elke Mertens, Karsten Jørgensen, Nilgül Karadeniz, Richard Stiles	The Routledge Handbook of Teaching Landscape, Taylor & Francis, 2019, ISBN: 9781351212939, 1351212931
8.	Heather L. Venhaus	Designing the Sustainable Site: Integrated Design Strategies for Small Scale Sites and Residential Landscapes, Wiley, 2012, ISBN: 9781118183434, 1118183436
9.	Adit Pal, Geeta Wahi Dua, Mohammad Shaheer	Landscape Architecture in India: A Reader, Landscape, 2013, ISBN: 9788192625409, 8192625400

10.	Diedrich Bruns, Stefanie Hennecke	The Routledge Handbook of Landscape Architecture Education, Taylor & Francis, 2022, ISBN: 9781000782196, 1000782190

Course Outcomes: After the completion of this course, students will be able to:

1. Elucidate the scope of landscape architecture, its interdisciplinary nature, and its role in addressing ecological and sustainability challenges.

2. Conduct comprehensive site analysis and develop site-responsive planning strategies for architectural interventions.

3. Apply appropriate landscape elements - including landform, vegetation, and built features—in the design of outdoor environments.

4. Explore traditional and modern landscape philosophies from both Eastern and Western cultures and apply these insights in design thinking.

5. Articulate the key contemporary landscape practices by evaluating design philosophies and projects of renowned landscape architects in India and abroad.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3														3	
	CO2		3													3	
	CO3			3									3			3	
	CO4	3														3	
	CO5	3									3		3			3	

PROFESSIONAL ELECTIVE - IV

Contact Hours/Week	:	02	Credits	:	2.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	30	SEE Marks	:	50
Course Code	:	6ATPE	Exam mode	:	Viva

ATPE10: AI in Architecture

Course Objectives: This course will enable students to:

1. Understand the fundamental applications of AI in architecture.
2. Develop computational thinking and coding skills necessary to engage with parametric workflows, generative design processes, and automation tools in architectural practice.
3. Equip critically evaluate and adapt to rapid advancements in AI technologies, preparing them for future professional challenges in an evolving architectural landscape.

COURSE OUTLINE:

This elective explores the evolving role of AI in architecture, moving beyond traditional rendering and visualization toward advanced platforms like Hypar, Finch, Krea AI, and Unreal Engine that integrate data-driven, parametric, and generative design workflows. Students will develop essential skills in coding, computational thinking, and automation to navigate this rapidly changing landscape. The course aims to equip learners with tools and knowledge to stay relevant amid accelerating AI advancements, bridging foundational concepts introduced at the Bachelor's level with more in-depth applications taught in Master's programs such as Digital Architecture.

ATPE11: Bio-Mimicry

Course Objectives: This course will enable students to:

1. To understand 'Bio-mimicry' in architecture
2. Reconnect with nature: learning to observe nature by function
3. To understand and explore how biology can be integrated with nature inspired design

4. To examine how the 'bio-mimicry approach' can influence sustainable designs and innovations

COURSE OUTLINE:
This elective is to introduce students to understand Bio-mimicry and explore the biological component that can influence the design approach. Application of nature-inspired approaches from historical to contemporary architecture and in sustainable practices.

ATPE12: Post-Modern Art Practices

Course Objectives: This course will enable students to:

1. Examine the relationship between artistic forms and architectural development across societies.
2. Raise awareness of postmodern attitudes in art and allied fields.
3. Explore material and formal representations in postmodern times.

COURSE OUTLINE:
The course begins with foundational Modernism and Avant-Garde movements, transitioning into postmodern philosophy and theoretical frameworks. Key trajectories include Neo-Dada, Pop Art, Institutional Critique, and Public Art, followed by explorations of Installation Art (Arte Povera, Brutalism, Earth Art) and Conceptual Art (Fluxus, idea-based practices). Minimalism emphasizes geometric abstraction, while Video Art integrates technology. Performance Art delves into Body Art and Feminist practices. Contemporary trends are analyzed through practitioner anecdotes, leading to mind-mapping historical/cultural narratives. The curriculum culminates in prototyping exhibitions (sketching, modeling) and a final public showcase, blending spatial design and iterative feedback.

Course Outcomes: After completion of course, Students would be able to:

1. **Apply** desired knowledge and skill in a particular domain of Architecture.
2. **Analyze** the processes required for the particular subject.
3. **Develop** an expertise in the chosen field for career enhancement.

Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs)

		POs												PSOs			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
COs	CO1	3											3			3	
	CO2	3											3			3	
	CO3	3											3			3	

STUDY TOUR

Contact Hours/Week	:	--	Credits	:	0.0
Total Lecture Hours	:	--	CIE Marks	:	100
Total Studio Hours	:	--	SEE Marks	:	--
Course Code	:	6ATST	Exam Mode	:	Portfolio

Course Objectives: This course will enable students to:

1. Understand historical, vernacular and contemporary architecture.
2. Document the learning from study tour.

OUTLINE:
A minimum of two Study tours has to be undertaken before the semester end examination of 6th semester B. Architecture. The study tour may include places of architectural interest in India or Abroad. The choice of places and buildings to be visited is left to the concerned department. The students have to submit a study tour report as

group work at the end of the semester. The reports are to be assessed by the department for progressive marks. The department may use its discretion about the choice of places for study tour and suitable time schedule.

Physical Education
(Sport &Athletics/Yoga & NSS)

Contact Hours/Week	:	02	Credits	:	0.0
Total Lecture Hours	:	-	CIE Marks	:	100
Total Practical Hours	:	30	SEE Marks	:	--
Course Code	:	NMC02-AT	Exam Mode	:	--