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

VII and VIII 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 2022-23)

VII 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	7ATS01	Architectural Design-VI				8						Viva	50	50	100	**8**
2.	PCC	7ATS02	Interior Design				3						Viva	50	50	100	**3**
3.	PCC	7ATS03	Working Drawing-II				4						Viva	50	50	100	**4**
4.	PCC	7ATT01	Urban Design			3						3	Theory	50	50	100	**3**
5.	PCC	7ATT02	Professional Practice			3						3	Theory	50	50	100	**3**
6.	BSAE	7ATT03	Estimation and Costing		Civil	3						3	Theory	50	50	100	**3**
7.	PEC	7ATPE	Professional Elective-V	Digital Architecture (ATPE13)				2					Viva	50	50	100	**2**
				Design of High-Rise Buildings (ATPE14)													
				Geographic Information System (ATPE15)													
			Total			9	15	2						**350**	**350**	**700**	**26**

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

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 2022-23)

VIII 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	8ATS01	Architectural Design - VII				8						Viva	50	50	100	**8**
2.	PCC	8ATS02	Research Skills and Project Introduction			1		3		3			Viva	50	50	100	**7**
3.	AEC	8ATS03	Traffic Awareness & Road Safety			1							Term Work	50	50	100	**1**
4.	BSAE	8ATS04	Earthquake Resistant Structures			1	2						Viva	50	50	100	**3**
5.	PCC	8ATT01	Urban Planning			3						3	Theory	50	50	100	**3**
6.	PCC	8ATT02	Construction Project Management			3						3	Theory	50	50	100	**3**
7.	PEC	8ATPE	Professional Elective-VI	Adaptive Re-Use of Built Forms (ATPE16)				2					Viva	50	50	100	**2**
				Architectural Atmospheres (ATPE17)													
				Architectural Conservation (ATPE18)													
			Total			9	10	5		3				**350**	**350**	**700**	**27**

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

SIDDAGANGA INSTITUTE OF TECHNOLOGY
Tumakuru-572103

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

SCHOOL OF ARCHITECTURE

DETAILED SYLLABUS FOR SEVENTH SEMESTER B. ARCHITECTURE

ARCHITECTURAL DESIGN - VI

Contact Hours/Week	:	08	Credits	:	8.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	120	SEE Marks	:	50
Course Code	:	7ATS01	Exam Mode	:	Viva

Course Objectives: This course will enable students to:

1. Gain knowledge about the principles of inclusive design
2. Interpret symbolism in architecture and its various expressions through elements of Architecture.
3. Create an architectural insert for a given program as a landmark in the given context.
4. Apply the knowledge of advanced roofing and modular construction techniques in detailing the building.

COURSE OUTLINE:

- Study of NBC, ZR, green building rating, Universal design and other building regulations and their implications on design. Emphasis on performative / responsive architecture including low energy and low carbon performance attributes. Overview of thumb rules related to MEP services, firefighting and acoustics.
- Explore the idea of identity as embodiment of contemporary expression instilled with traditional wisdom and regional architecture. Articulation of the building character through details.
- Projects such as Legislative assemblies, GPO, Govt. Administrative complexes, Public library, high-rise mixed-use towers, cultural complexes, transit nodes, stadium and sports complexes, shopping mall, urban recreation center and other urban landmarks can be selected as studio projects.
- Design and detailing of advanced building techniques related to structural, aesthetic and climatic requirements of the building.

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. 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. A Vertical studio involving other semesters can be encouraged to carry out one full or part-time project.
e. The portfolio covering the above topics shall be presented viva.

REFERENCE BOOKS:

1.	Elizabeth M. Golden,	"Building from Tradition: Local Materials and Methods in Contemporary Architecture", ISBN 9781138909922, Routledge, 2018.
2.	Russell Fortmeyer, Charles F. Linn	"Kinetic Architecture: Designs for Active Envelopes" ISBN 978-1864704952, The Images Publishing Group, 2014
3.	Lisa Iwamoto	"Digital Fabrications: Architectural and Material Techniques" ISBN 978-1568987903, Princeton Architectural Press, 2009.

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

1. **Apply** various building guidelines and codes to the given project.
2. **Develop** proficiency in building envelope design by providing appropriate building services and details for the project.
3. **Interpret** the possibility of exploring symbolism through a deeper understanding of the larger context.
4. **Develop** appropriate strategies to make buildings inclusive.
5. **Design** and detail advanced building techniques incorporated in to the given 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		2	3		2		3						3			

	CO3			2	3								3			
	CO4		2	3	2	3		3			2			3			
	CO5		2			2								3			

INTERIOR DESIGN

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	-	SEE Marks	:	50
Total Studio Hours	:	45	CIE marks	:	50
Course Code	:	7ATS02	Exam mode:	:	Viva

Course Objectives: This course will enable students to:

1. Get introduced to the elements of interior design.
2. Familiarize with various services related to interiors.
3. Explore different materials used for interiors and their finishes.

COURSE OUTLINE:

- **Introduction** to interior design and its history of evolution. Basics of interior design - concepts of interior space making/furniture layout, elements of interior design, lighting design, and selection of materials, finishes & colors.
- **Components of Interior Design** - Understanding the proportions to enhance the quality of interior space and its psychological effects of space such as ceiling, flooring, walls, furniture, lighting, etc.
- **Services** related to interior design to be integrated such as plumbing, air-conditioning, acoustics, electrical & lighting etc.
- **Ergonomics** of furniture, materials used, its style, characteristics and functional applications. Furniture positioning considering day lighting and artificial lighting factors in the interiors. Integration of interior landscaping elements plants, water, paving, artifacts etc.
- **Studio Project** shall include two interior design projects (one major and one minor) to be handled with complete design, detailing, furniture layout, specification for the materials, and their application. The projects shall relate to residential, commercial, educational or interiors of other public spaces.

REFERENCE BOOKS:

1.	Francis D.K Ching	Interior design Illustrated, Wiley & Sons, 4th Edition, 2018, ISBN-10: 9781119377207, ISBN-13: 978-1119377207
2.	Julius Panero, Zelnik Martin & Joseph De Chiara	Time Saver's Standards for Interior Design, McGraw-Hill, 2nd edition, 2017, ISBN-10: 1259004090, ISBN-13: 978-1259004094
3.	Julius Panero & Zelnik Martin	Human Dimension and Interior Space, Watson-Guptill, 1979, ISBN-10: 0823072711, ISBN-13: 978-0823072712
4.	Maureen Mitton	Interior Design Visual Presentation: A Guide to Graphics, Models and Presentation Techniques", John Wiley & Sons, 4th edition, 2012, ISBN-10: 0470619023, ISBN-13: 978-0470619025
5.	John F Pile	Interior Design, Pearson, 4th edition, 2007, ISBN-10: 0132408902, ISBN-13: 978-0132408905

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

1. **Design** interior spaces using various concepts and elements of design.
2. **Develop** schemes for interiors along with technical details and services.
3. **Apply** the knowledge of using materials considering the sensitivity of the design.
4. **Devise** furniture considering ergonomics and enhance indoor space quality using landscape 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	3			
	CO2		3	3											3		
	CO3			3							3		3	3			
	CO4			3										3			

WORKING DRAWING-II

Contact Hours/Week	:	04	Credits	:	4.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	60	SEE Marks	:	50
Course Code	:	7ATS03	Exam Mode	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with construction techniques in interior spaces.
2. Get introduced to the details of materials used for interiors.
3. Understand the concept of illumination and its detailing.

COURSE OUTLINE:

- **Introduction to wood products as building material** - Plywood, block board, particle board, hard board, laminates, MDF, HDF, HDPE wood wool, etc.
- **Interior residential construction** - Detail of wardrobes and showcases in wood and Ferro cement.
- **Interior residential construction** - modular kitchens and cabinet shelves.
- **Interior office construction** - book selves, file cabinets and workstations.
- **Partition systems** - wall and ceiling using plywood, PVC, marble, granite, aerated concrete blocks, gypsum board, glass etc.
- **False ceiling systems** - Fibre board, plaster of Paris, particle board, wood wool, metals, straw and any other materials introduced in the market including acoustic ceiling and their construction details.
- **Lighting design** - Design and detailing of lighting for interiors.

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** detailed drawings for interior construction.
2. **Design and develop** detailed drawings of residential and office interiors.

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				2									3		2
	CO2										3		3		3		2

URBAN DESIGN

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50

Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	7ATT01	Exam Mode	:	Theory

Course Objectives: This course will enable students to:

1. Get introduced to theories of Urban Design.
2. Understand the changing attitude toward Urban form/Space and Architecture.
3. Familiarize Urban Design concepts through traditional and contemporary examples.
4. Comprehend and dissect the formality and informality of urban design interventions.
5. Understand that city design must respond to new challenges - environmental challenges, low-carbon cities, compact cities, healthy cities, etc.

UNIT I

Behavioural /Perceptual approach: City as visual experience– walking, observing, documenting/recording and interpreting city/ and its elements –such as neighbourhood, street, block, building, architectural elements, green spaces, heterogeneous spaces (inclusive of different parts of the city) etc. Theories works of Gordon Cullen, Kevin Lynch. Examples: Organic and Planned development as highlighted through Old market roads (Chor Bazaar, Old Delhi, etc) and Newer settlements (Newer settlements, shopping streets, etc). **10 Hrs**

UNIT II

Social cultural Approach: study of social and cultural layer that influence urban design and architecture. Study of the transition and dependencies between formal and informal spaces. Theories / approach by Jane Jacob, Kevin Lynch Examples: Studying smaller built environment settings like a part of the market, market adjoining roads, informal vendors, etc. **10 Hrs**

UNIT III

Morphological approach: built and un-built, relation with scale, size and influence of byelaws and regulation. Example showing sustainable transformation quality of space and form. Understanding the differences between organic and planned city-making through the concepts of density, building-street ratio, safety, communal significance, etc.Theory and works of Collin Rowe - Street, public square facade. Notion of Collective Memory by Aldo Rossi. **09 Hrs**

UNIT IV

Functional and Temporal approach: contextual formal and informal urban environment and readability differences, Approach by Kevin lynch through good city form, critical study by Charles Correa & Indian example such as Connaught place, church gate, Ballard estate, Gate way of India, Chor Bazaar (Mumbai), Old Delhi, Bada Bazaar (Kolkata), etc. **09 Hrs**

UNIT V

Environmental approach: Relationship with physical activity and built environment, human activity and building as environment. Components of a healthy city and a city that enables healthy citizens. Study by Charles Correa & Indian examples. **07 Hrs**

REFERENCE BOOKS:

1.	Aldo Rossi	The Architecture of the City, MIT Press, 1982, ISBN : 9780262680431, 0262680432
2.	Christopher Alexander	A Pattern Language, Oxford University Press, 1977, ISBN: 9780190050351, 0190050357
3.	Rob krier	The Work : Architecture, Urban Design, Drawings and Sculptures · Volume 1, 2021, ISBN: 9783035622805, 3035622809
4.	Kamu Iyer	Bo mbay: From Precincts to Sprawl, Popular Prakashan, 2014, ISBN: 9788179918449, 8179918440
5.	Kevin Lynch	The Image of the City, The MIT Press, 1964. ISBN: 978-0262620017
6.	Kevin Lynch	Good City Form, MIT Press, 1981, ISBN: 9780262620468, 0262620464
7.	Gordon Cullen	The Concise Townscape, Taylor & Francis, 2012, ISBN: 9781136020896, 1136020896
8.	Charles Correa	Housing and Urbanisation: Building Ideas for People and Cities, the University of Michigan, 1999, ISBN: 9788190112802, 8190112805

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

1. **Explore** the behavioral/perceptual approach of urban design theories.
2. **Identify** the socio-cultural influences on urban design and architecture.
3. **Elucidate** morphological changes through space and time, through works by eminent urban designers.
4. **Comprehend** the functional and temporal spaces in Indian context.
5. **Explore** the sustainability approaches for various scales of urban design projects.

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													2	
	CO3		2				2	2								2	
	CO4		2					2								2	
	CO5							2								2	

PROFESSIONAL PRACTICE

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	7ATT02	Exam mode	:	Theory

Course Objectives: This course will enable students to

1. Get familiarize with the characteristics and duties of the profession.
2. Explain the importance of the provisions of the Architect's Act 1972 and it' regulations.
3. Get introduced to the tendering process.
4. Understand the role of Architect in the management of contracts.
5. Explain the role of Architect in supervision and valuation of building.

UNIT I

Architect and profession - Introduction, profession, its characteristics and essential difference between profession and other occupations. Owner's expectation from an architect, ethics.
Architect's profession: Duties and liabilities. Architectural practice: Office management, business development, accounts. Types of architectural organizations and laws relating to architectural practice, general administration.

09 Hrs

UNIT II

The Architect's Act 1972 - Introduction, council of architecture, its main functions, registration of architects, architect's (professional conduct) regulations 1989. Conditions of engagement, scope of comprehensive services. Architectural competitions – its purposes, guidelines, conditions, types of competitions, classification of competitions, competition organization, step by step procedure to conduct architectural competition. **09 Hrs**

UNIT III

Tenders - Introduction, objective of tendering, technical terms, tenders based on economic classification, method of inviting tenders, notice inviting tenders, prerequisites for tendering, issues encountered on opening of tenders and suggested guidelines.Receipt and opening of tenders, evaluation of tenders.Selection of contractor – public tenders, pre-qualification and post-qualification of contractors, limited tenders and single tenders, nomination.Award of contract.Issue of work order.
Management of contracts -Introduction, contract, objective of contract management, technical terms, the Indian contract act 1872, types of contracts. General conditions of contract, performance bond, damages for non-completion, determination of contract, interim payment, completion certificate, virtual completion certificate, penultimate certificate, interim and final certificate, materials, fluctuations, variations, defective work, defect liability period, arbitration, excepted matters, disputes in contract and architect's role in resolving such disputes.

09 Hrs

UNIT IV

Supervision - Definition, its characteristics, duties of an architect, engineer in charge, site visits, site meeting, co-ordination with various agencies, site book and site office.
Arbitration - Definition, Arbitration and conciliation act 1996, arbitrator, umpire, order of reference, selection of arbitrators, powers and duties of arbitrators, arbitration award and implementation of award.
Byelaws and easements - Building byelaws, National Building Code, floor area ratio, floor space index, floating FAR, zoning regulations. Easements, various easement rights, architect's role in protecting easement rights.

09 Hrs

UNIT V

Valuation and Dilapidation - Definitions and architect's role in preparation of valuation and dilapidation reports and certifications. Physical and Economic life of buildings. Introduction to valuation, essential characteristics, classifications and purpose of classifications. Methods of valuation, standard rent and cost of construction.

Building Industry: General overview of the industry; various participants and dimensions of building industry. Role of architect, employer, and contractor in sustainable buildings and developments. Types of insurance necessary during contract; fire insurance.
General Law: Overview & definition of common law, statute law, equity, criminal law, civil law etc., Role of courts in dispensing various types of cases. Overview of recent Bills and Acts: Real Estate (Regulation and Development) Act 2016; Land Acquisition Act, Rehabilitation Act and Resettlement Act 2013; Consumer Protection Act. FDI in real estate, Goods & Service Taxes and other taxes applicable in architecture practice and construction industry. **09 Hrs**

REFERENCE BOKS:

1.	K.G.Krishnamurthy and S.V.Ravindra	Professional Practice for Architects, Engineers and Builders, PHI Learning Pvt. Ltd, 2nd edition, 2022, ISBN-10: 8120348745, ISBN-13: 978-9391818593
2.	Roshan Namavathi	Professional Practice for Architects and Engineers, Lakhani Book, 2016, ISBN-10: 9385492667, ISBN 978-9385492662
3.	Bob Greenstreet	Legal Contractual Procedures for Architects, Architectural Press, 5th edition, 2002, ISBN-10:0750654082, ISBN-13 978-0750654081

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

1. **Elucidate** the responsibilities and liabilities of the profession.
2. **Describe** the provisions of the Architect's Act 1972 and its regulations.
3. **Comprehend** the types of tenders and contracts with the procedures for architectural projects.
4. **Explore** the importance of building bye-laws and the role of architect in supervision and arbitration.
5. **Identify** the general law and valuation procedures applicable in architectural practice and 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	3			3				3
	CO2								3								3
	CO3						3		3			3					3
	CO4						3		3								3
	CO5						3		3			3					3

ESTIMATION & COSTING

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	7ATT03	Exam Mode	:	Theory

Course Objectives: This course will enable students to:

1. Develop the necessary skills for establishing and writing specifications based on proposed materials for the preparation of Bill of Quantities leading to cost estimation of proposed architectural works.
2. Develop the sensitivity and necessary skills for calculating the environmental cost of a building.
3. Get exposed to the different types of estimates, their preparation for different types of structures.
4. Familiarize with methods of quantify and specifications for different types of structures.
5. Get introduced to the methods of measurements, rate analysis of building items, types and preparation of contract documents.

UNIT I

Introduction: Importance of Estimation in Civil Engineering. Different type of Estimates, Methods of estimations, study of various drawings with estimates, Concept of measurement, Units of Measurement.
Estimation: Methods of taking out quantities and cost by centre line method and long wall and short wall method. Preparing of detailed and abstract of estimates for the Buildings of flat roof. **09 Hrs**

UNIT II

Building Components: RCC-Beams, Columns with Footings, Roof slabs, manhole, septic tank and steel truss.

Specifications: Definition of specifications, objective of writing specifications, essentials of specifications, general and detail specifications of item of work in buildings, concrete, masonry (Brick & Stone), Plastering, concrete flooring, Painting, wood work. **09 Hrs**

UNIT III

Rate Analysis: Definition and purpose. Working out quantities and rates for the following standard items of works - earth work in different types of soils, cement concrete of different mixes, bricks and stone masonry, flooring, plastering, RCC works, centering and form work for different RCC items, wood and steel works for doors, windows and ventilators. **09 Hrs**

UNIT IV

Measurement Of Earthwork For Roads: Methods for computation of earthwork -Cross sections - mid section formula or average end area or mean sectional area, trapezoidal & prismoidal formula without cross slopes. **09 Hrs**

UNIT V

Valuation: Introduction; Gross Income; Net Income; Outgoings; Scrap Value etc; Obsolescence; Annuity; Capitalized Value; Years Purchase; Sinking Fund; Depreciation: Valuation of building; Determination of depreciation; Method of Valuation; Mortagage Lease; Fixation of Rent; Example of rent fixation; Plinth area required for residential buildings. **09 Hrs**

NOTE: Assignments: Estimation for - Two Bedroom residence.

REFERENCE BOOKS:

1.	B.N. Dutta	Estimating & Costing in civil engineering- theory and practice including Specifications & valuation, 26th Rev. Ed., UBS publications and distributors, New Delhi, 2009.
2.	N. Chakraborti	Estimating, Costing, specification & valuation in Civil Engg. Edition 24th 2010 Published by author, Calcutta.
3.	S.C.Rangwala	Valuation of Real properties, 7th Ed., Charotar Publishing House, Anand, New Delhi, 2008.
4.	S.C.Rangwala	Estimating, costing and valuation, 16th Ed., Charotar Publishing House, Anand, New Delhi, 2014.

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

1. **Estimate** quantity of building by centre line method, long wall and short wall method.
2. **Estimate** quantity and cost of septic tank, manhole, beams, columns and write specifications for different civil engineering items., as per standard procedures.
3. **Prepare** rate analysis from first principles for various civil items.
4. **Estimate** quantity and cost of different types of roads.
5. **Explain** the fundamental principles of valuation, including cost, depreciation, and market value of buildings.

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															2
	CO2		3				2										2
	CO3											3					2
	CO4											3					2
	CO5											3	2				2

PROFESSIONAL ELECTIVE - V

Contact Hours/Week	:	02	Credits	:	2.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	30	SEE Marks	:	50
Course Code	:	7ATPE	Exam Mode	:	Viva

ATPE13: Digital Architecture

Course Objectives: This course will enable students to:

1. Enable students to create diverse and complex architectural forms with ease using computer algorithms and scripted design techniques.
2. Familiarize students with the concept of "scripted, iterative, and indexical architecture".
3. Explore the critical debates surrounding curvilinearity, expressionism, and the societal role of technology in architecture.

COURSE OUTLINE:

This course will enable students to allow a diverse range of complex forms to be created with great ease using computer algorithms. The new genre of "scripted, iterative, and indexical architecture" produces a proliferation of formal outcomes, leaving the designer the role of selection and increasing the possibilities in architectural design. This has "re-initiated a debate regarding curvilinearity, expressionism and role of technology in society" leading to new forms of non-standard architecture by architects such as Zaha Hadid, Kas Oosterhuis and UN Studio.

ATPE14: Design of High Rise Buildings

Course Objectives: This course will enable students to:

1. Get introduced to concept of skyscrapers.
2. Realize the importance of services in High-Rise buildings.
3. The various complexities involved in designing skyscrapers.

COURSE OUTLINE:

The design and construction of skyscrapers involves creating safe, habitable spaces in very tall buildings. The buildings must support their weight, resist wind and earthquakes, and protect occupants from fire. Yet they must also be conveniently accessible, even on the upper floors, and provide utilities and a comfortable climate for the occupants. The problems posed in skyscraper design are considered among the most complex encountered given the balances required between economics, engineering, and construction management. The students may be given a snapshot of this very important typology that gives them an insight into complex world of various services that form the backbone of any skyscrapers. The students will also critically analyse the impact of tall buildings on environment and climate.

ATPE15: Geographic Information System

Course Objectives: This course will enable students to:

1. Get introduced to the GIS applications for architects.
2. Widen the scope of analysis using technological tools.

COURSE OUTLINE:

The objective is to study the tools and acquire skills to analyze spatial data and solve complex problems related to geography, urban planning, environmental science, and many other fields. GIS allows students to visualize data on maps, helping them understand spatial relationships and patterns that are not easily apparent in tabular data. This spatial analysis capability is crucial for making informed decisions in areas such as land use planning, natural resource management, and disaster response. The imparted knowledge from this tool will equip students to carry out their Architectural Design Project in a much larger scope.

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			

SIDDAGANGA INSTITUTE OF TECHNOLOGY
Tumakuru-572103

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

SCHOOL OF ARCHITECTURE

DETAILED SYLLABUS FOR
EIGHTH SEMESTER
B. ARCHITECTURE

ARCHITECTURAL DESIGN - VII

Contact Hours/Week	:	08	Credits	:	8.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	120	SEE Marks	:	50
Course Code	:	8ATS01	Exam Mode	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with various layers of understanding and analysis of urban areas
2. Interpret the role of architecture in urban domain and public realm.
3. Create architectural spaces as extension of private domain in a public building to respond to the urban context.

COURSE OUTLINE:

- Rigorous, directed and brief study of an urban context (techniques mapping, diagramming) that will lead to clear understanding of dynamic networks, issues affecting the area and design strategies that build on the strength and opportunities to create meaningful spaces for communities. Various case studies (literature/site visits) will be analyzed at various stages. Developing an understanding of the urban development in India and its role in accelerating ecological imbalance and intensifying the concentration of population in urban areas. Critically reviewing and analyzing current infrastructure projects and the idea of Smart City, AMRUT and HRIDAY cities.
- Suitable design intervention addressing concerns such as the need to create public realm as extension of the private domain of buildings; the impact and relationship of buildings to the larger context. The key ideas informing the selection of the design projects are multi- functional spaces, public access to the majority of spaces, large gathering and event spaces which can be extended to immediate urban context.
- The probable architectural design projects include urban infill, revitalization and renewal of urban fragments, adaptive reuse, urban waterfront development, transportation nodes/interchanges, multi-use urban complexes including museums, performing arts centres.
- Incorporating principles of universal design, sense of place, visual identity and green building concepts to design.

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. The portfolio covering the above topics shall be presented viva.
d. Projects can be presented using appropriate computer aided tools.
e. Urban design techniques to enhance the character of a place can be explored.

REFERENCE BOOKS:

1.	Donald Watson	"Time Savers Standard for Urban Design", McGraw-Hill Education, 2010, ISBN: 9780070685079, 007068507X
2.	Jon T. Lang	"Urban Design: A Typology of Procedures and Product", Elsevier/Architectural Press, 2005, ISBN: 9780750666282, 0750666285
3.	Edmund Bacon	"Design of Cities", Thames and Hudson, 1974, ISBN: 9780500340516, 050034051X.
4.	Kevin Lynch	"Site Planning",Literary Licensing, LLC, 2012, ISBN: 9781258420697, 1258420694
5.	Rahul Mehrotra, Felipe Vera, José Mayoral	Ephemeral Urbanism : Does Permanence Matter?, LISt Lab, 2017, ISBN: 9789569571213, 9569571217
6.	Sharada Dwivedi, Rahul Mehrotra	Bombay : The Cities Within , Eminence Designs Pvt. Limited, 2008, ISBN: 9788190060264, 8190060260
7.	Rahul Mehrotra	The Kinetic City & Other Essays, ArchiTangle GmbH, 2021, ISBN: 9783966800136, 3966800136

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

1. **Explore** the role of architecture in shaping urban fabric.
2. **Conduct** urban analysis to decipher the issues to be addressed through design.
3. **Create** architectural design that fits into a specific urban context.
4. **Apply** principles of universal design, sense of place, visual identity and green building concepts in design.
5. **Design** large scale architectural inserts responding to urban context.

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			3			
	CO4					3		3						3			
	CO5			3	3									3			

RESEARCH SKILLS AND PROJECT INTRODUCTION

Contact Hours/Week	:	07	Credits	:	7.0
Total Seminar Hours	:	45	SEE Marks	:	50
Total Lecture / Studio Hours	:	60	CIE marks	:	50
Course Code	:	8ATS02	Exam mode:	:	Viva

Course Objectives: This course will enable students to:

1. Familiarize with research methods in Architecture.
2. Analyze architectural concepts, ideas and systems in a systematic method.
3. Frame strong research questions to which students can answer through their design.
4. Compile the existing knowledge systems about the topic chosen and carve out an architectural. program suitable to address the issues raised.

COURSE OUTLINE:

Pre-Project - The work involves students to discuss with the faculty to identify an area of interest or specific types of Structures. The pre project stage should end with a project proposal giving routine information on site, location, need, broad requirements and scale. In addition, the proposal should clearly indicate the "project question" or an area (or areas) of interest.

Students shall present a seminar on a project topic which would include the following

- Identification of topic/area of research interest
- Statements – aims, objectives
- Scope and feasibility of the project
- Research through Literature Study, precinct study etc
- Identification of categories/ parameters
- A detailed analysis and outcomes/research findings.
- Identify the Architectural proposals for exploration of research findings.

Architectural proposals shall include:

- Precedents of similar project, either actual visit to such projects or through literature reviews.
- Cultural, contextual, historical, technological, programmatic, functional concerns of the project.
- A rhetorical of speculative statement that would be the basis of further investigation. Documentation which is part of this presentation shall be taken as completion of final requirement.

NOTE:

a. The course shall run on a one to one discussion mode.
b. Students shall be allotted guides after finalizing their topic of concern through seminar.

c. Students shall be promoted to document and published quality research papers out of their work done during the semester.

REFERENCE BOOKS:

1.	All references will be project specific and include a wide range of subjects (history, theory, services, material, and construction) from architecture and allied fields addressed through critical papers, essays, documented studies, and books.	
2.	Linda Groat and David Wang	Architectural Research Methods, John Wiley Sons, 2nd Edition, 2013 ISBN: 978-0-470-90855-6
3.	Iain Borden and Katerina Rüedi Ray	The Dissertation: A Guide for Architecture Students, Routledge; 3rd edition, ISBN-13: 9780415725361

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

1. **Elucidate** basic architectural research skills.
2. **Appraise** various architectural research methods and methodologies.
3. **Critically** analyze architectural ideas and buildings to develop strong constructs.
4. **Develop** an architectural program as a solution to the issues raised through the literature study.

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			
	CO3		3		3			3						3			
	CO4				3								3	3			

TRAFFIC AWARENESS AND ROAD SAFETY

Contact Hours/Week	:	01	Credits	:	1.0
Total Lecture Hours	:	15	CIE Marks	:	50
Total Studio Hours	:	--	SEE Marks	:	50
Course Code	:	8ATS03	Exam Mode	:	Term Work

Course Objectives: This course will enable students to:
1.Familiarize with the road safety norms.
2.Get introduced to the motor's vehicle act.
3.Understand the traffic signs and markings.

- Introduction to Road Safety. Road as an active space, Types of users, User behaviour, Sensory Factors like Vision and Hearing in User Behaviour. Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelers, Auto- Rickshaw, Bicycles and Cycle Rickshaws, Non Motorised Vehicles. Vehicle Characteristics: Dimensions, Weight, Turning Radii, Braking Distance, Lighting System, Tyres, etc. Types of Hazards: Conflicts and Accidents.
- Typology of Roads: Components and Design Road Classification: National Highways, State Highways, District Roads (MDR and ODR), Village Roads. Urban Road Classification: Expressways, Arterial, Sub-Arterial, Collector, Local, Service Roads, One-Way, Two-Way etc. Mountainous Roads. Speed Limits of Road types. Design of Roads: Cross Sectional Elements- Right of Way, Carriageway, Median, Shoulders, Side Walks, Lanes, Cycling Track, Green Strip, Curbs, Camber, etc. Spatial Standards for the Cross-Section Design. Relationship between Road design and Road Safety.
- Intersections Types of Road Intersections: Basic forms of at-grade Junctions (T, Y, Staggered, Skewed, Cross, Scissors, Rotary, etc. Grade Separated Junctions (with or without interchange): Three –Leg, Four-Leg, Multi-Leg, etc. Design of Intersections: Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional Lanes, Pedestrian Crossings, Median Openings, Traffic Calming Components like Speed Breakers and Table-Top Crossings etc. Design

Considerations for Diverging, Merging and Weaving Traffic. Location and Design for Traffic Signals.

- Pedestrian Circulation and Barrier Free Design Requirement of Pedestrian Infrastructure: Sidewalks and footpaths, Recommended Sidewalk widths, Pedestrian Crossing, Pedestrian Bridges, Subways, Cycle Tracks, etc. Barrier free design: Location and Design Standards for Ramps for wheel Chair Access, Other Provisions like Tactile for Visually Challenged etc. Safety Provisions: Pedestrian Railings, Anti-skid Flooring, Pedestrian Signal, Walk Button, etc.
- Traffic Signs and Road Markings Types of Traffic Signs: Principles and Types of Traffic Signs, Danger Signs, Prohibitory Signs, Mandatory Signs, Informatory Signs, Induction Signs, Direction Signs, Place Identification Signs, Route Marker Signs, etc. Reflective Signs, LED Signs, Static and Dynamic signs. Standards for Traffic Signs: Location, Height and Maintenance of Traffic Signs. Types of Road Markings: Centre Lines, Traffic Lane Lines, Pavement Edge Lines, No Overtaking Zone Markings, Speed Markings, Hazard Markings, Stop Lines, Pedestrian Crossings, Cyclist Crossings, Route Direction Arrows, Word Messages, Marking at Intersections, etc. Material, Colour, and Typography of the Markings.
- Traffic Signals, Traffic Control Aids, Street Lighting Traffic Signals: Introduction, Advantages and Disadvantages Signal Indications: Vehicular, Pedestrian and Location of the Signals. Signal Face, Illustration of the Signals, Red, Amber, Green Signals and its significance, Flashing Signals Warrant of Signals, Co-ordinated Control of Signals. Traffic Control Aids: Roadway Delineators (Curved and Straight Sections) Hazard Markers, Object Markers, Speed Breakers, Table Top Crossings, Rumble Strips, Guard Rails and Crash Barriers etc. Street Lighting: Need for Street Lighting, Type of Lighting, Illumination Standard, Location and Intermediate Distance.
- Road Accidents Nature and Types of Road Accidents (Grievously Injured, Slightly Injured, Minor Injury, Non injury, etc) The Situation of Road Accidents in India (yearly), Fatality Rates, etc Factors (and Violations) that cause accidents. Prevention and First Aid to Victims. Collision Diagrams and Condition Diagram exercises. Traffic Management Measures and their influence in Accident Prevention.
- Road Safety and Civic Sense Need for Road Category of Road Users and Road Safety Suggestions. Precautions for Driving in Difficult Conditions (Night, Rain, Fog, Skidding Conditions, Non Functional Traffic lights, etc.) Type of Breakdowns and Mechanical Failures. Accident Sign (Warning Light, Warning Triangle, etc.) Introduction to Concept of Civic Sense and its relationship to Road Safety: Importance of Civic Sense, Road Etiquettes and Road User Behaviour, Rules of Road, Right of the Way. Providing Assistance to Accident Victim. Sensitisation against Road Rage.
- Traffic Regulations, Laws & Legislations Indian Motor Vehicle Act (Chapter VIII: Control of Traffic to be discussed in detail) Regulation Concerning Traffic: Cycles, Motor Cycles and Scooters, Rules for Pedestrian Traffic, Keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc. Speed and Hazard Management. Penal Provisions. National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules. Introduction to Good Practices.

REFERENCE BOOKS:

1.	R Srinivasa Kumar	Introduction to Traffic Engineering, ISBN 13: 978-9386235473, The Orient Blackswan, 2018
2.	L R Kadiyali	Traffic Engineering and Transport Planning, ISBN 13: 978-8174092205, Khanna Publishers, 1999
3.	Ministry of Road Transport and Highways, Government of India.	Book on Road Safety Signage and Signs
4.	MORT&H	Pocketbook of Highway Engineers, Third Revision, 2019
5.	Publication by UTTIPEC namely, Street Design Guidelines, UTTIPEC guidelines for Road Marking, UTTIPEC guideline and specification for Crash Barriers, Pedestrian Railing and Dividers, UTTIPEC Standard Type Crossing Design.	

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

1. **Identify** the traffic signage and markings.
2. **Elucidate** the Pedestrian Circulation and Barrier Free Design Requirement.
3. **Develop** the civic sense needed for road safety.

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	2														3	

EARTHQUAKE RESISTANT STRUCTURES

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	15	CIE Marks	:	50
Total Studio Hours	:	30	SEE Marks	:	50
Course Code	:	8ATS04	Exam mode	:	Viva

Course Objectives: This course will enable students to:

1. Get introduced to the basic terminologies associated with the Earthquake phenomenon.
2. Study Vernacular Architecture details and their Earthquake resistant design concepts.
3. Know the process of vulnerability assessment of buildings and settlements.
4. Understand building configuration required for Earthquake resistant design.
5. Explore different building materials and their construction details adoptable in seismic prone area.

COURSE OUTLINE:

- **Elementary Seismology** - Introduction to earthquake phenomenon, history of past earthquakes in the world. Earths structure, Plate tectonics, Pangaea, Types of Faults and Earthquake Zones of India. Elementary Seismology, Seismic Waves, Magnitude, Intensity. Seismological Instruments: Seismograph, Accelerograph and Seismoscope.
- **Earthquake effects on structures** - Factors affecting Earthquake Loads on buildings. Load paths, characteristics of Earthquake ground motion. Natural period of vibration, free vibration response of a building, Materials, Plan & vertical irregularities, redundancy. Horizontal & vertical eccentricities in mass and stiffness distribution, soft storey etc.
- **Concepts of Earthquake resistant design** - Seismic resistance, isolation and damping systems. Code requirements (IS code 1893-2002). Vernacular constructions Architectural design Concepts. (IS 4326-1993). Behaviour of Non-structural elements like staircases, parapets, glazing, cladding panels, suspended ceiling, Mechanical services equipment's etc.
- **Guide lines for improving earthquake resistance** - Vulnerability assessment of existing buildings in both Urban areas. Earthen buildings (IS 13827: 1993), Low strength Masonry buildings (IS:13828-1993), Masonry Buildings, R.C.C. Buildings, Ductile R.C. structures (IS13920-1993), MRF and Shear walls.
- **Earthquake safe construction of New Buildings** – General Precautions, Check list, recent technologies used in Earthquake resistant building design.

NOTE:

a. Relevant case studies and literature studies can be given by the studio teachers and report has to be compiled by the students in groups.

b. Portfolio shall contain one project to the scale of site planning and Earthquake resistant construction detailing of at-least one or more blocks has to be addressed.

c. Studio teachers can arrange for site visits for field supervision.

REFERENCE BOOKS:

1.	Indian Society of Earthquake Technology, Roorkee	Manual of EQR, Non-engineered construction
2.	NPEEE	Resource material for Earthquake Design Concepts
3.	Pankaj Agrawal and Manesh Shrikande	Earthquake resistant design of structures, Prentice Hall India Learning Private Limited, 2006, ISBN-10:9788120328921, ISBN-13: 978-

		8120328921
4.	Dr Vinod Hosur	Earthquake resistant design of building structures, Wiley & Sons, 2012, ISBN-10: 8126538597, ISBN-13: 978-8126538591
5.	IIT Kanpur- NICEE	Learning earthquake design and construction- earthquake tips
6.	Code books	IS: 4326- Seismic detailing of Masonry buildings, IS: 1893-2002, IS: 13920-1993 , IS: 456-2000, IS: 800-2007 – Seismic design and detailing of RC and steel structures.

Course Outcomes: After the completion of this course, students will be able to:
1. **Elucidate** the basics of seismology and its effects on building.
2. **Analyse** the impacts of earthquake on building.
3. **Evaluate** the buildings for vulnerability assessments.
4. **Design** and detail buildings considering the principles of earthquake resistance.

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		2										3		
	CO4			3									2		3		

URBAN PLANNING

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Practical Hours	:	--	SEE Marks	:	50
Course Code	:	8ATT01	Exam Mode	:	Theory

Course Objectives: This course will enable students to:
1. Acquire knowledge about settlements as an expression of culture, influenced by climate and geographical location.
2. Understand the dynamics of human settlements, both past and present, through various theories and approaches.
3. Get introduced to urbanization and its influence on the transformation of settlements.
4. Identify the relationship between various land uses, density and components of infrastructure and services.
5. Study various methods and techniques of data collection and analysis.
6. Discuss the concept and requirement of regional planning principles.

UNIT I

Evolution, origins and growth of settlements:- Characteristics of Rural and Urban settlements; Urban form based on different determinants – Natural (climate, topography, resources, geography) and Man-made (cultural, economic, religious, administrative, political). 2. Planning efforts and impacts on historical cities - Ancient civilizations (Mesopotamia, China, Egypt, Indus Valley, Mayan); Classical cities (Greek, Roman, Medieval, Neoclassical, Renaissance, Baroque, City Beautiful); Indian cities – (Vedic/Indo-Aryan, Colonial, Dravidian, Mughal). Study how an old town grew and built itself organically in the nearby area. **09 Hrs**

UNIT II

City Planning in Post-Industrial Revolution Era: - Responses to impacts of industrialization in cities: Legislative reforms to public health, work and living conditions; Spatial responses to Poor Living Conditions (Railroad tenements, Dumbbell plan); Utopian visions - Model Towns (Robert Owen, J.S. Buckingham, George Cadbury), Tony Garnier (Cité Industrielle).

Pioneers in planning theories - Ebenezer Howard (Garden City), SoriaY.Mata (The Linear City), Patrick Geddes (Outlook Tower, Valley Section, Folk-Work-Place, Civic Survey), Le Corbusier (Ville Contemporaine), Frank Lloyd Wright (Broadacre City), Ludwig Hilberseimer (Decentralized City), Constantinos A Doxiadis (Ekistics), Clarence Arthur Perry (Neighbourhood Unit); Clarence Stein (American Garden Cities).

Planned and Built Cities: - Brasilia (Oscar Niemeyer), Chandigarh (Le Corbusier), Islamabad (Constantinos A Doxiadis), Tel Aviv (Patrick Geddes).

Alternate visions for cities: – Arcosanti (Paolo Soleri), New Urbanism (Peter Calthorpe, Andres Duany, ElizabethPlater-Zyberk). **09 Hrs**

UNIT III

Urbanization in India: - Trends in urbanization in post-independence India; Planned cities in Post Independence India (Bhubaneswar, Gandhinagar, Jamshedpur); Census classification of Indian cities (based on population size); Growth, issues and management of Metropolitan cities; Slums (official definitions and slum statistics), quality of infrastructure, environment and life in the Urban areas.
Urban housing typologies – City Development Authority layouts, Public Sector Townships, Affordable housing, Slum Rehabilitation Projects. **09 Hrs**

UNIT IV

Urban Structure: - Internal spatial structure of the city: Concentric Zone theory; Sector theory; Multiple Nuclei Theory; Characteristics of Central business district, Urban nodes (Origin and/or destination of trips, location of major transport nodes, interfaces of local/regional transport), Suburbs, Peri-urban areas.
Land use and Zoning: - Land use categories and representation; Relationship between Land use and Zoning; Zoning Types: Euclidian Zoning, Performance Zoning, Form- based Codes, Incentive Zoning, Height Zoning, Open Space Zoning. **09 Hrs**

UNIT V

Planning Processes and Tools: - Urban Redevelopment: Renewal, Rehabilitation, Conservation; Scales of Planning: Master plan/Comprehensive Development Plan, Area Plan, Regional Plan, Perspective Plan, URDPFI Guidelines; Steps of urban planning. **09 Hrs**

NOTE:

a. Seminar with selected readings and presentations to be made individually or in groups. Submission in the form of a Poster and report.

REFERENCE BOOKS:

1.	Spiro Kostof	The City Assembled - The Elements of Urban Form Through History, Little, Brown,1992, ISBN: 9780821219300, 0821219308
2.	Simon Eisner, Arthur Gallion, Stanley Eisner	The Urban Pattern, Wiley, 1993, ISBN: 9780471284284, 0471284289
3.	Clara Greed	Introducing Town Planning, Longman, 1996, ISBN: 9780582293007, 0582293006
4.	A.E.J. Morris	History of Urban Form Before the Industrial Revolution, Taylor & Francis, 2013, ISBN: 9781317885139, 1317885139
5.	Kallidaikurichi C S, Amitabh Kundu, B. N. Singh	Handbook of Urbanization in India, An Analysis of Trends and Processes, Oxford University Press, 2009, ISBN: 9780195672398, 0195672399
6.	Dominic Rathbone	Civilizations of the Ancient World : A Visual Sourcebook, Thames & Hudson, 2009, ISBN: 9780500288344, 0500288348
7.		Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2014, Town and Country Planning Organization, Ministry of Urban Development, Government of India

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

1. **Analyse** impact of different determinants on evolution and growth of urban settlements.
2. **Criticize** the planning theories of various planners worldwide.
3. **Summarize** the trends of urbanization in post-independence India and initiatives by the government.
4. **Explore** the urban structure, characteristics of different zones, regulations and related theories.
5. **Recognize** the relevant planning techniques adopted at urban level.

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	2				1							1			3	

CONSTRUCTION PROJECT MANAGEMENT

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Practical Hours	:	--	SEE Marks	:	50
Course Code	:	8ATT02	Exam mode	:	Theory

Course Objectives: This course will enable students to:

1. Familiarize with the construction industry and its organizational structure.
2. Understand the concepts of project planning and execution techniques needed for building construction projects.
3. Get introduced to various software applications and equipment's in the construction industry.

UNIT I

Introduction to Project, its Stages and Construction Project management: Project, Organisation, need for management of building/construction projects, Principles and Objectives of Project Management, brief understanding about study areas in Project Management. Types of Construction Projects, Life Cycle Stages of a Project (Construction Project).

Construction Organisation: Types of construction firms/ companies. Types of organization, study of organizational structures suitable for building and construction projects, the roles of the various members of a typical construction organization, qualities of an ideal construction organization, ethics in construction industry. **09 Hrs**

UNIT II

Decision making and Feasibility Study: Involvement and Roles of Consultants and Contractor in decision making at various stages. Basic understanding of decision making principles and tools (e.g. Decision Tree, SWOT Analysis, Cost-Benefit Analysis), Value Engineering, Investment Criteria, Project Feasibility Study. Computer applications in Project Management: Introduction to use of computers for solving inventory, scheduling and other issues related to construction and management.

Roles of Project Manager: Roles & Responsibilities of Project/ Construction Managers, Scope Management in Construction: Scope Planning, Definition, Verification and Control Project Management Stages: Project planning, project scheduling and project controlling. **09 Hrs**

UNIT III

Time, Cost and Resource Management in Construction: Activity definition, Activity Sequencing, Estimation of Resource Requirements, Time & Cost for an Activity, Schedule Development, Budgeting, Schedule control, Cost Control. Construction Management Techniques: Project Planning – Work Breakdown Structure; Construction Management Techniques: Project Scheduling – Bar Chart, Milestone Chart, Network Theories (CPM and PERT analysis) - Event, activity, dummy, network rules, graphical guidelines for network, numbering of events; Project Cost analysis (Indirect project cost, direct project cost, slope of the direct cost curve, total project cost) & brief understanding of about time, cost and resource optimization; Project Crashing (using CPM). **09 Hrs**

UNIT IV

Construction Management Techniques: Project Monitoring and Control – Role of the project manager in monitoring the specifications, Follow-up for quality control, the measurement book (MB), RA bills, interim and final checking and certification of works on site based on the BOQ and terms of contracts. Project updating, Progress Curves. Quality Management in Construction: Quality Planning and Quality Control. Technical Specifications and Procedures. Codes and Standards. Construction Health and safety and management: Safety Measures and management: Integrating workers' Health and Safety into management. **09 Hrs**

UNIT V

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

Types of Construction Equipment: earth moving (JVB, tractors, excavators, dragline, trenching equipment, etc.,) transporting (various types of trucks), spreading and compacting (motor graders and various types of rollers) and concreting equipment (including concrete mixers, transporting and pumping equipment), hoisting machines, form work, shoring material etc. **09 Hrs**

NOTE:

a. Use of computers to be encouraged although the same is not for the Examination purposes.
b. Students must be encouraged to study and document case studies of live construction projects.

REFERENCE BOOKS:

1.	S V Ravindra and K G Krishnamurthy	'Construction and Project Management', CBS PUBLISHERS AND DISTRIBUTORS PVT LTD. 2nd Edition, 2017, ISBN: 978-9386217790
2.	Kumar Neeraj Jha	'Construction Project Management', Pearson Education India; 2nd edition, 2015, ISBN: 978-9332542013
3.	Dr. B C Punmia and K. K. Khandelwal	Project planning and control with PERT and CPM, Laxmi Publications Pvt Ltd, 4th Edition, July 2023. ISBN (13): 978-8131806982
4.	R L Peurifoy	'Construction Planning, Equipment and Methods' McGraw Hill Education; 7th edition (May 2010), ISBN: 978-0070706996
5.	BIS (Bureau of Indian Standards)	National Building Code of India (NBC 2016-SP-7). Part 7
6.	BIS (Bureau of Indian Standards)	IS 15883 (Part 1): Guidelines for construction project management: Part 1 General 2009.
7.	BIS (Bureau of Indian Standards)	IS 13430: 1992 Code of practice for safety during additional construction and alteration to existing buildings.

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

1. **Differentiate** between types of construction projects and organizational structures.
2. **Identify** the roles and responsibilities of team members in various stages of project management.
3. **Conduct** project analysis considering time, cost and resources and prepare project schedule.
4. **Summarize** effective project monitoring, quality control and safety measures and management techniques.
5. **Identify** various equipment used in construction for appropriate work.

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
	CO5											3			3		

PROFESSIONAL ELECTIVE - VI

Contact Hours/Week	:	02	Credits	:	2.0
Total Lecture Hours	:	-	CIE Marks	:	50
Total Studio Hours	:	30	SEE Marks	:	50
Course Code	:	8ATPE	Exam Mode	:	Viva

ATPE16: Adaptive Re-Use of Built Forms

Course Objectives: This course will enable students to:

1. Understand the theoretical and practical background for a systematic process to support adaptive re-use of the built environment for sustainable development.

COURSE OUTLINE:

Introduction to the concept of adaptive reuse – history and various theories of adaptive reuse. Understanding adaptive re-use of buildings as a key to sustainable development. To explore the relationship between financial, environmental and social parameters associated with the adaptive re-use of buildings.Analysis of the existing structure - Importance of building assessment report – process of documentation and condition mapping in deciding design recommendations.

- Understanding the design logic. Role of various parameters in concept generation.
- Strategies for re-modelling.

ATPE17: Architectural Atmospheres

Course Objectives: This course will enable students to:

1. Understand theoretical frameworks of architectural atmosphere.

2. Develop sensitivity to sensory aspects (light, color, texture, sound).
3. Analyze how atmosphere shapes architectural meaning and experience.
4. Study historical and contemporary atmospheric design examples.

COURSE OUTLINE:

This course enables an experimental space to learn how architects deal with creating intangible ambiences in space-making through case studies and modelling in architectural design. Students can build a strong foundation in theoretical and practical understanding of Atmospheres through early-stage design development, analysis, and representation of architectural spaces. Unlike Climatology which technically analyses responsive climatic factors, Architectural Atmospheres is an upcoming field which studies the experiential aspects of built environments that address intangible characteristics of how to analyse and generate architectural ambiences.

ATPE18: Architectural Conservation

Course Objectives: This course will enable students to:

1. Introduce students to the basic concept of architectural heritage along with examples.
2. Introduce students to the fundamentals of architectural conservation.
3. Expose the students to the current actual ongoing works on sites across the world.

COURSE OUTLINE:

Introduction: What is heritage- the concept of heritage, Various kinds of heritage. Conservation practices followed in various parts of the world- examples. Structural conservation: retrofitting, strengthening of structural elements. Cultural landscapes: overview, types, practices. Material study: lime, uses of lime, properties etc. Issues and threats to heritage: Tangible and Intangible. Legislative documents related to heritage and conservation of heritage. Documentation and assessment of heritage structures: Inventory method, latest instrumentation methods, 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. **Analyse** 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			