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

2024 -2025

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)

B.H. Road, Tumakuru – 572 103, Karnataka, India

Ph. :+91-816-2214001, 2282696, 2214000 Fax.:+91-816-2282994

E-Mail: principal@sit.ac.in web: www.sit.ac.in

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 2021-22)

VII Semester

Sl. No.	Course and Course Code		Course Title		Teaching / Paper setting Dept.	Teaching hrs/week				Examination					Credits
						Lecture	Studio	Practical	Self Study Component	Duration in hrs.	Mode of Exam	CIE Marks	SEE Marks	Total Marks	
						L	S	P	SS						
1.	PCC	7ARL1	Architectural Design-VII			3	5				Viva	50	50	100	**8**
2.	PCC	7ARL2	Interior Design				4				Viva	50	50	100	**4**
3.	BSAE	7ARL3	Working Drawing-II					4			Viva	50	50	100	**4**
4.	BSAE	7ARL4	Earthquake Resistant Structures			1	2				Viva	50	50	100	**2**
5.	PCC	7AR01	Contemporary Architecture-II			3				3	Theory	50	50	100	**3**
6.	AEC	7AR02	Professional Practice			3				3	Theory	50	50	100	**3**
7.	PCC	7AR03	Urban Design			3				3	Theory	50	50	100	**3**
8.	PEC	7ARE	Professional Elective -III	Geographic Information System (7ARE1) Digital Architecture (7ARE3) Inclusive Design (7ARE5)			2				Term Work	50	50	100	**2**
9.	HSMC	SHS01-AT	Social Connect and Responsibilities		Any Dept.			2		-	-	100	-	100	**1**
			Total			13	13	6				**500**	**400**	**900**	**30**

Note: PCC: Professional Core Course, **BSAE**: Building Science and Applied Engineering Course, **HSMC**: Humanity and Social Science & Management Course, **SEC** –Skill Enhancement Course, **AEC**- Ability Enhancement Course, **PEC**- Professional Elective Course, **NCMC**- Non-Credit Mandatory Course, **OEC**- Open Elective Course

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

SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMAKURU

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B.ARCHITECTURE

SCHEME OF TEACHING AND EXAMINATION (270 Credits Scheme)

(Applicable to the students admitted during 2021-22)

VIII Semester

Sl. No.	Course and Course Code		Course Title	Teaching / Paper setting Dept.	Teaching hrs/week				Examination					Credits
					Lecture	Studio	Practical	Self Study Component	Duration in hrs.	Mode of Exam	CIE Marks	SEE Marks	Total Marks	
					L	S	P	SS						
1.	PCC	8ARL1	Architectural Design-VIII		3	5				Viva	50	50	100	**8**
2.	AEC	8ARL2	Research Skills and Project Introduction			4		3		Viva	50	50	100	**7**
3.	PCC	8ARL3	Traffic Awareness & Road Safety			1				Term Work	50	50	100	**1**
4.	PCC	8AR01	Urban and Regional Planning		3				3	Theory	50	50	100	**3**
5.	AEC	8AR02	Construction Project Management		3				3	Theory	50	50	100	**3**
6.	PCC	8AR03	Green Buildings		3				3	Theory	50	50	100	**3**
7.	PEC	8ARE	Professional Elective-IV: Rural Planning & Infrastructure (ARE6) / Bio-Mimicry (ARE7) / Architectural Conservation (ARE8)			2				Term Work	50	50	100	**2**
8.	HSMC	CC07-AT	Scientific Foundations of Health	SMCRI	1				1:30	Theory	50	50	100	**1**
			Total		13	12		3			**400**	**400**	**800**	**28**

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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 - VII

Contact Hours/Week	:	08	Credits	:	8.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Studio Hours	:	75	SEE Marks	:	50
Course Code	:	7ARL1	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:

- Overview of practical rules of thumb related to MEP services, firefighting and acoustics. Study of NBC, ZR, green building rating and other building regulations and their implications on design.
- Introduction to Inclusive design – principles and elements. Formal, informal and interactive public spaces.
- Projects such as Legislative assemblies, GPO, Govt. Administrative complexes, 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, modular construction, pre-engineered structures incorporated in 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. 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	:	04	Credits	:	4.0
Total Lecture Hours	:	--	SEE Marks	:	50
Total Studio Hours	:	60	CIE marks	:	50
Course Code	:	7ARL2	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.
- **Costing & Estimation** of projects based on the market survey data of materials.
- **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.

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			

WORKING DRAWING-II

Contact Hours/Week	:	04	Credits	:	4.0
Total Lecture Hours	:	--	CIE Marks	:	50
Total Practical Hours	:	60	SEE Marks	:	50
Course Code	:	7ARL3	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:

- **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

EARTHQUAKE RESISTANT STRUCTURES

Contact Hours/Week	:	03	Credits	:	2.0
Total Lecture Hours	:	15	CIE Marks	:	50
Total Practical Hours	:	30	SEE Marks	:	50
Course Code	:	7ARL4	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

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. **Analyze** 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													2		
	CO2			3											2		
	CO3				2										2		
	CO4							2						3	3		

CONTEMPORARY ARCHITECTURE - II

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	7AR01	Exam Mode	:	Theory

Course Objectives: This course will enable students to:

1. Extrapolate the contribution of eminent contemporary architects.
2. Study Ideas and philosophies of renowned International Architects.
3. Discuss 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 the students toward context and climate-responsive ideas in designing buildings.

UNIT I

Ideas & Works of Richard Meier – Smith House - Connecticut, Getty Centre - Brentwood, Los Angeles & Jubilee Church Rome

Ideas and works of Norman Foster - Hong Kong Shanghai Bank, Renault Distribution Centre - England & Zayed National Museum – Abu Dhabi.

Ideas & Works of Renzo Piano – Pompidou Centre – Paris, Zentrum Paul Klee- Bern & Jean - Marie Tjibaou Cultural Centre – Tinu Peninsula **09 Hrs**

UNIT II

Ideas and works of Bernard Tschumi - Park de la Villete – Paris & New Acropolis Museum –Athens, Paul& Henri Carnal Hall, Institut Le Rosey, Rolle, Switzerland

Ideas and works of Frank Gehry – Vitra Design Museum – Germany, Guggenheim Museum – Bilbao & Museum of Pop Culture - Seattle

Ideas and works of Zaha Hadid – Heydar Aliyev Cultural Canter – Baku, London Aquatics Center- London &Maxxi National Museum - Rome **09 Hrs**

UNIT III

Ideas and works of Daniel Leibskind - Jewish Museum – Berlin, Ground Zero - New York & Denver Art Museum - Colorado

Ideas and works of Santiago Calatrava - Lyon-Satolas Railway Station, Olympic Stadium- Athens & Turning Torso - Sweden

Ideas and works of Rem Koolhaas - The CCTV building - Beijing, The Maison à Bordeaux – France& Seattle Central Library – Seattle **09 Hrs**

UNIT IV

Ideas and works of I M Pie - Pyramide Du Louvre - Paris, Museum of Islamic Art –Doha & Luce Memorial Chapel – Taiwan

Ideas & works of Jean Nouvel – Louvre Abudhabi, 100 Eleventh Avenue- Manhattan & DR Koncerthuset - Copenhagen

Ideas & Works of SOM Architects – The Willis Tower, 1973, Chicago Burj Khalifa – Dubai, Sheikh Khalifa Medical City – Abu Dhabi **09 Hrs**

UNIT V

Ideas and works of Geoffrey Bawa - Kandalama Hotel - Dambulla, Bawa House – Colombo & Srilankan Parliament Building

Ideas and Works of Hassan Fathy - New Gourna Village - Luxor, Hamid Said house – Cairo & Ceramics Factory in Qina - Egypt

Ideas and works of Tadao Ando - Church of light - Osaka, Naoshima contemporary Art museum – Japan & Water Temple – Japan **09 Hrs**

REFERENCE BOOKS:

1	Richard Meier	Richard Meier, Architect, Vol. 4, Rizzoli publisher, 2004 ISBN - 10: 0847826333, ISBN-13: 978-0847826339
2	Martin Pawley	Norman Foster: A Global Architecture (Architecture/Design Series), Universe publisher, 1999 ISBN - 10: 0789302632, ISBN-13: 978-0789302632
3	Renzo Piano & Kenneth Frampton	Renzo Piano: The complete Log book, Thames and Hudson Publisher, 2017 ISBN - 10: 9780500343104, ISBN-13: 978-0500343104
4	Bernard Tschumi	Architecture & Disjunction, The MIT Press Publisher, 1996 ISBN - 10: 0262700603, ISBN-13: 978-0262700603
5	Paul Goldberger	Building Art: The life & work of Frank Gehry, Knopf publisher, 2015 ISBN - 10: 0307701530, ISBN-13: 978-0307701534
6	Aaron Betsky	Complete Zaha Hadid: Expanded and Updated, Thames and Hudson Publisher, 2018 ISBN - 10: 0500343357, ISBN-13: 978-0500343357

7	Santiago Calatrava & Cristina Carrillo de Albornoz	Santiago Calatrava: Drawing, Building, Reflecting, Thames and Hudson Publisher, 2018 ISBN - 10: 0500343411, ISBN-13: 978-0500343418
8	Rem Koolhaas	Rem Koolhaas: Elements of Architecture, Taschen America Llc Publisher, 2018 ISBN - 10: 9783836556149, ISBN-13: 978-3836556149
9	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 world-renowned Architects.
2. **Analyse** the context and climate responsiveness of the projects.
3. **Explore** the approaches to form and function by various architects.
4. **Identify** Innovative design ideas and use of new materials and technology in 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														2	
	CO5	3														3	

PROFESSIONAL PRACTICE

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	7AR02	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. **09 Hrs**

UNIT IV

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.
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. **09 Hrs**

UNIT V

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.
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.
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**

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. (PO6,PO8,PO12)
2. **Describe** the role of the provisions of the Architect's Act 1972 and its regulations. (PO6,PO8,PO12)
3. **Comprehend** the types of tenders with the procedures for architectural projects. (PO9,PO11)
4. **Identify** the role of architect in contract management. (PO9,PO11)
5. **Explore** the importance of building bye-laws and zoning regulations. (PO6,PO12)

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			
	CO4									3		3		3			
	CO5						3						3	3			

URBAN DESIGN

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	7AR03	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. Get introduced to the concepts of sustainability in urban design.

UNIT I

Introduction and Scope Relationship between Architecture, Urban Design and Urban Planning; Brief review of the evolution of the urban design as a discipline, basic principles and theories. Broad understanding of urban forms and spaces at various spatial scales through examples from historic cities. **07 Hrs**

UNIT II

Typologies and Procedures: Concepts of public and private realm; understanding different types and procedures of urban design interventions their scale relationships; constraints and challenges of urban design in democratic versus authoritarian settings. **09 Hrs**

UNIT III

Elements of Urban Design: Understanding the city as a three-dimensional element; Urban form as determined by interplay of masses, voids, order, scale, harmony, symmetry, colour and texture; Organization of spaces and their articulation in the form of squares, streets, vistas and focal points; Concept of public open space; Image of the city and its components such as edges, paths, landmarks, street features. **10 Hrs**

UNIT IV

Urban Design and Sustainability: Sustainability concept; Relationship of urban design with economic, environmental and social sustainability; Urban renewal and urban sprawl; Concepts of Transit Oriented Development, Compact City, Healthy City and Walkable City. **10 Hrs**

UNIT V

Urban Design Implementation: Urban design and its control; Institutional arrangements for design and planning, their roles, powers and limitations; Types of planning instruments, structure plans, master plans and local area plans and zoning guidelines; Design communication and role of public participation. **09 Hrs**

NOTE:

a. Assignments to include study of concepts relating to cultural and religious systems, structure, climatic interfaces and integration of all these in the resultant forms.
b. Models, analytical studies and paper presentations individually or in groups.

REFERENCE BOOKS:

1.	Larice, M. and Macdonald E.	The Urban Design Reader. 2nd Ed. The Routledge Urban Reader Series, Abingdon, Oxon : Routledge. 2013 ISBN: 978-0415668088
1.	Carmona, M., Heath, T., Oc, T. and Tiesdell, S.	Public Places - Urban Spaces. Oxford : Architectural Press. 2010 ISBN: 0-7506-3632-7
2.	Marshall, S.	Cities design and evolution. New York : Routledge. 2009 ISBN: 978-1138174313
3.	Lang, J. T.	Urban Design: A Typology of Procedures and Products. Oxford : Elsevier/Architectural Press. 2005 ISBN: 978-1138188358
4.	Moughtin, C., Cuesta, R., Sarris, C. and Signoretta, P.	Urban Design - Methods and Techniques. Oxford : Architectural Press. 2003. ISBN: 978-0750641029
5.	Watson, D., Plattus, A. and Shibley, R.	Time-Saver standards for urban design. New York : McGraw Hill. 2003 ISBN: 978-1259002908
6.	Kevin Lynch	The Image of the City, The MIT Press, 1964. ISBN: 978-0262620017

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

1. **Describe** the role of urban design as a discipline.
2. **Explore** the typologies of design interventions at urban scale.
3. **Identify** morphological changes through space and time, through works by eminent urban designers.
4. **Explore** the sustainability approaches for various scales of urban design projects.
5. **Implement** tools and techniques for mapping urban places.

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

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	:	7ARE	Exam Mode	:	Term Work

7ARE1: 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.

7ARE3: Digital Architecture

Course Objectives: This course will enable students to:

1. Familiarize with Parametric Architecture and Computational designing tools.
2. Develop proficiency in Rhino modelling of complex NURB surfaces.
3. Illustrate and explain the algorithmic coding in Grasshopper, visual programming language.

COURSE OUTLINE:

Introduction to parametric architecture & computational design. Basics & working of computational design - algorithms & coding. Introduction to software's like rhino & grasshopper. Basic modelling & form generation using these software's. Theory & application of logic & concepts in form generation.

7ARE5: Inclusive Design

Course Objectives: This course will enable students to:

1. Get introduced to the concept of 'Inclusive Design', a design paradigm that extends far beyond the bias on the able-bodied in architecture.
2. Widen the scope of the conceptual architectural thinking and strengthen the design skills to achieve social sustainability through design by addressing needs and abilities of all sections of the society.

COURSE OUTLINE:

This course will introduce students to Inclusive Design and its concepts. It focuses on the basic issues that create the biggest impact on usability of the physical environment — the interaction between human ability (and disability) and the design of places, products, and systems. The focus of the course is on the usability of spaces, buildings, objects, and interfaces based on human ability. The student will develop an understanding of human ability and its importance in defining both disability and usability. 'Harmonised Guidelines & standards for Universal accessibility in India' will be introduced, to help in architectural design and detailing.

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

1. **Apply** desired knowledge and skill in a particular domain of Architecture. (PO1)
2. **Analyze** the processes required for the particular subject. (PO1)
3. **Develop** an expertise in the chosen field for career enhancement. (PO1)

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**	
	CO3	**3**													**3**	

SOCIAL CONNECT & RESPONSIBILITIES

Contact Hours/Week	:	02	Credits	:	1.0
Total Lecture Hours	:	--	CIE Marks	:	100
Total Studio Hours	:	30	SEE Marks	:	--
Course Code	:	SHS01-AT	Exam Mode	:	--

Course Objectives: This course will enable students to:

1. Enable the student to do a deep drive into societal challenges being addressed by NGO(s), social enterprises & the government and build solutions to alleviate these complex social problems through immersion, design & technology.
2. Provide a formal platform for students to communicate and connect to their surroundings.
3. Enable to create of a responsible connection with society.

UNIT I

Plantation and adoption of a tree: Plantation of a tree that will be adopted for four years by a group of B.Tech/ B Arch. students. They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, and its appearance in folklore and literature. **03 Hrs**

UNIT II

Heritage walk and crafts corner: Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms. **03 Hrs**

Unit III

Organic farming and waste management: usefulness of organic farming, wet waste management in neighbouring villages, and implementation in the campus. **03 Hrs**

Unit IV

Water Conservation: knowing the present practices in the surrounding villages and implementation in the campus, documentary or photo blog presenting the current practices. **03 Hrs**

Unit V

Food Walk City's culinary practices, food lore, and indigenous materials of the region used in cooking.

03 Hrs

NOTE:

The pedagogy will include interactive lectures, inspiring guest talks, field visits, social immersion, and a course project. Applying and synthesizing information from these sources to define the social problem to address and take up the solution as the course project, with your group. Social immersion with NGOs/social sections will be a key part of the course. Will all lead to the course project that will address the needs of the social sector?

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 - VIII

Contact Hours/Week	:	08	Credits	:	8.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Studio Hours	:	75	SEE Marks	:	50
Course Code	:	8ARL1	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:

- The role of urban space as a public realm and the need to create such spaces as extension of private domain in a public building shall be investigated and shall become one of the architectural goals.
- Introduction to Urban analysis – reading urban tissues, analyzing the area, listing the key issues.
- Derive architectural program to fit into the fabric and enhance the character of place.
- Large scale urban insert projects such as transport interchanges, large scale retail areas, entertainment nodes, sports complex, mixed use developments can be handled.
- Incorporating principles of energy conservation, zero energy building, minimum ecological footprint and other 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	Kevin A Lynch	The image of the city, MIT Press, 1960, ISBN-10: 0262620014, ISBN-13: 978-0262620017
2	Kevin A Lynch	A theory of Good city Form, MIT Press, 1981, 1st Edition, ISBN-10: 0262120852, ISBN-13: 978-0262120852
3	Gordon Cullen	The Concise Townscape, Architectural Press, 1st edition, 1961, ISBN-10: 0750620188, ISBN-13: 978-0750620185
4	Rob Krier	Urban Space, Rizzoli, 1993, ISBN-10: 0847802361, ISBN-13: 978-0847802364
5	Matthew Carmona	Public Places Urban Spaces: The Dimensions of Urban Design, Routledge, 2nd Edition, 2010, ISBN-10: 1856178277, ISBN-13978-1856178273:

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 energy conservation, zero energy building, minimum ecological footprint, and other concepts to 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 Studio Hours	:	60	SEE Marks	:	50
Total Self-Study Hours	:	45	CIE marks	:	50
Course Code	:	8ARL2	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	:	--	CIE Marks	:	50
Total Studio Hours	:	15	SEE Marks	:	50
Course Code	:	8ARL3	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.

UNIT I

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.
03 Hrs

UNIT II

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. **03 Hrs**

UNIT III

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. **03 Hrs**

UNIT IV

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. **03 Hrs**

UNIT V

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. **03 Hrs**

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. (PO1)
2. **Elucidate** the Pedestrian Circulation and Barrier Free Design Requirement. (PO1)
3. **Develop** the civic sense needed for road safety. (PO1)

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	

URBAN AND REGIONAL PLANNING

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	45	CIE Marks	:	50
Total Practical Hours	:	--	SEE Marks	:	50
Course Code	:	8AR01	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

Introduction - Introduction to urban planning and Urban Design and its principles addressing the physical and social challenges that towns, villages, and cities face as they grow or decline. Urban settlements and Rural settlements, Relation between urban and rural settlements, differences, origins, evolution and growth of settlements. Major functions of a city, city-forming and city-serving functions.

History of Planning - Characteristics and planning efforts of cities and towns of various historical periods like Egyptian, Roman, Greek, Medieval, Renaissance and City Beautiful

Cities of Indus valley period, Vedic period, Mughal period and British period. **09 Hrs**

UNIT II

Planning Theories - enunciated by Ebenezer Howard, Patrick Geddes, Soria Y Mata, Doxiadis, Le-Corbusier, Clarence Stein, Clarence Arthur Perry, Hilberseimer, Frank Lloyd Wright

Indian city planners: Charles Correa, B V Doshi **09 Hrs**

UNIT III

Land Use Planning - Internal spatial structure of cities - concentric zone theory, sector theory, multiple nuclei concept and work-home concept. Land use planning, analysis of land uses in Indian cities. Suburbs, Peri-urban areas.

Components of a settlement - activity pattern and land use, traffic and road network, density of population and population distribution.

Central business district of a city, other business districts, urban nodes, fringe areas and suburbs.

Introduction to environmental factors, terrain and soils, neighbourhood planning, subdivision concepts, mapping and platting, street layout and design, provision of utilities - electricity, gas, water, sanitary sewer and storm sewers and drainage. Interaction with state and local government, organization of these governments, and general public works activities. **09 Hrs**

UNIT IV

Urbanization and Urban Renewal -Industrial Revolution and its impact on contemporary cities. Urbanization and urban growth, impact on physical growth of urban settlement., Causes and consequences of urban blight and obsolescence, slums and shanties, prevention of formation of slums and squatter settlements.

Urban renewal– Definition, rehabilitation, redevelopment and conservation.

Scales of Planning: Master plan/Comprehensive Development Plan, Area Plan, Regional Plan, Perspective Plan, URDPFI Guidelines; Steps of urban planning.

Introduction to the new concepts of urban development like, Smart cities, Transit-oriented Development (TOD) and Special Economic Zone (SEZ) **09 Hrs**

UNIT V

Planning Techniques - Study and analysis of existing settlements, methodology of conducting diagnostic surveys and studies, land use survey, density survey, FSI survey, traffic surveys and presentation of data. Environmental and management issues. Introduction to GIS analysis methods in urban planning.

Regional Planning - Relation among various settlements of a region, pattern of settlements in a region. Definition of a region, various types of regions, basic principles of regional 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.	Gallion and Eisner	The Urban Pattern: city planning and Design, CBS, 2005, 5th edition, ISBN-10: 8123909152, ISBN-13: 978-8123909158
2.	Peter Hall	Urban and Regional Planning, Routledge, 2010, ISBN-10: 1138694835, ISBN-13: 978-1138694835
3.	Lewis Keeble	Principles of planning, Estates Gazette Ltd, 4th edition, 1969, ISBN-10: 0900361050, ISBN-13: 978-0900361050
4.	Spiro Kostof	The city shaped, Bulfinch, 1993, ISBN-10: 0821220160, ISBN-13: 978-0821220160
5.	Mahesh Chand and V K Puri	Regional planning in India, Allied publishers private limited, 2012, ISBN-10: 9788170230588, ISBN-13: 978-8170230588
6.	R P Misra	Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept Publishing Co, 1992, ISBN-10: 8170223040, ISBN-13: 978-8170223047

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

1. **Summarize** the planning concepts and design principles in Urban, rural and historical settlements.
2. **Criticize** the planning theories of various planners worldwide.
3. **Analyze** the sociocultural and spatial structure of Urban context.
4. **Interpret** the contemporary trends in urbanization and urban redevelopment.
5. **Recognize** the relevant planning techniques adopted at urban and regional 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							3								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	:	8AR02	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 Construction Project management, Principles, objectives and need for construction project management. Types of construction projects, Knowledge (study) areas in a construction project and management, various stakeholders in a construction project.

Construction project organization- Types of construction firms/ companies, Types (or structure) of construction organization, study of organizational structures suitable for building and construction projects, the role of the various members of a typical construction organization (General manager, project manager, engineer, supervisor, etc) qualities of an ideal construction organization, ethics in construction industry.

09 Hrs

UNIT II

Construction planning and scheduling- Project management stages- Overview of Project planning, project scheduling and project controlling, Time, cost and resource management in construction.
Project planning- Life cycle stages in a construction project, Preparation of Work Break Down Structures and Sequencing of Activities (Activity definition, Activity Sequencing, Estimation of Resource Requirements, Time & Cost for an Activity, Development of project Schedule) **09 Hrs**

UNIT III

Construction management techniques- Project scheduling- Preparation of Schedules using Bar chart, Milestone charts, Precedence diagrams.
Networking theories and rules (for CPM and PERT analysis)- Basic concepts (Event, activity, dummy), rules for developing networks, graphical guidelines for network, numbering of events, errors in network, difference between PERT & CPM. **09 Hrs**

UNIT IV

Project Networks- Networking and analysis using CPM, Project networking and cost analysis using CPM, Indirect project cost, direct project cost, slope of the direct cost curve, calculation of total project duration and cost using CPM network diagram.
Project networking and analysis using PERT, calculation of total project duration and cost using PERT network diagram. Brief understanding of about time, cost and resource optimization.
Introduction to software applications in Construction Management – Use of Software applications like MS Project, Primavera etc. for preparing and managing schedules. **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 a equipment.
Types of construction equipment: Brief description of earth moving (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) **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.

TEXT 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
1.	Kumar Neeraj Jha	'Construction Project Management', Pearson Education India; 2nd edition, 2015, ISBN: 978-9332542013

REFERENCE BOOKS:

1.	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
2.	R L Peurifoy	'Construction Planning, Equipment and Methods' McGraw Hill Education; 7th edition (May 2010), ISBN: 978-0070706996
3.	BIS (Bureau of Indian Standards)	National Building Code of India (NBC 2016-SP-7). Part 7
4.	BIS (Bureau of Indian Standards)	IS 15883 (Part 1): Guidelines for construction project management: Part 1 General 2009.
5.	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 various organizational structures suitable for construction industry.
2. **Identify** various stages involved in execution of a construction project work.
3. **Identify** appropriate tools for preparing a project schedule.
4. **Calculate** minimum time duration for a given project.
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	1								2		3			2		
	CO2	2										3			3		
	CO3					3						2			3		
	CO4					3									3		
	CO5											3			2		

GREEN BUILDINGS

Contact Hours/Week	:	03	Credits	:	3.0
Total Lecture Hours	:	40	CIE Marks	:	50
Total Practical Hours	:	--	SEE Marks	:	50
Course Code	:	8AR03	Exam mode	:	Theory

Course Objectives: This course will enable students to:

1. Understand the concept of green building and ecological footprints.
2. Apply cost effective techniques and reduce operational energy in buildings.
3. Understand the embodied energy in building materials.
4. Know the importance of global warming and building rating systems.
5. Familiarize with the alternative sources of energy in buildings.

UNIT I

GLOBAL WARMING, CLIMATE CHANGE & ILL EFFECTS

Cause and ill effects of Global warming, Linear and non-linear impacts of climate change on multiple systems – increase in global average temperatures, extreme precipitation, drought, food system, livability and workability, Resource- challenges and opportunities – land, water, energy and materials. Carbon Footprint – Symbolic problem to calculate carbon footprints for automobiles, Global Efforts to reduce carbon emissions.

SUSTAINABLE DEVELOPMENT AND GREEN BUILDINGS AS A SOLUTION

Sustainable development goals – introduction, understanding of SDGs related to sustainable development – quality education, clean water and sanitation, affordable and clean energy, industries, innovation and infrastructure, sustainable cities and communities, responsible consumption and production, climate actions, lives below water and life on land. Impact of Green buildings on environment, benefits of green buildings - Environmental benefit, Economical benefits, Health and Social benefits. **08 Hrs**

UNIT II

GREEN BUILDING CONCEPTS

Definition of green buildings, definition of sustainability, typical features of green buildings. Comparison of Green V/s Conventional Building. Case studies of various green buildings in India and abroad.

GREEN BUILDING RATING SYSTEMS

Green building rating systems – purpose, highlights, point system with differential weightage. Introduction to green movement in India, IGBC – Inception, scope of work, achievements, overview and certification process, project checklist. Comparison of LEED, BREEAM and IGBC rating systems. Building standards and codes referred to in IGBC related to environmental aspects. **08 Hrs**

UNIT III

SUSTAINABLE ARCHITECTURE AND DESIGN

Principles of sustainable development in Building Design - Characteristics of Sustainable Buildings. Integrated Design approach – concept and principles. Passive architectural features - Alternative building construction techniques – case study of works of Nirmithi Kendra, COSTFORD and Habitat.

SITE SELECTION AND PLANNING

Aspects of site preservation – Soil erosion control – Local building regulations – proximity to public transport – provision of basic amenities – use of low emitting vehicles – heat island reduction – universal design guidelines – green building guidelines – basic facilities for construction workforce. Sustainable methods and innovations in landscaping – rain gardens, vegetable patches, green roofing, vertical farming, green facades

ENERGY EFFICIENCY

Energy Efficiency – performance-based approach and prescriptive approach, building envelope, lighting, air-conditioning systems, heating systems, fans, pumps and motors. Use of on-site and off—site renewable energy resources. Energy efficient building envelopes, Solar Heat Gain Coefficient, U-Values for facade materials, efficient lighting technologies, energy efficient and BEE rated appliances for heating and air-conditioning systems in buildings, zero ozone depleting potential (ODP) materials. Energy metering and monitoring. Net Zero buildings – concept, advantages, design steps. **08 Hrs**

UNIT IV

UTILITY OF SOLAR ENERGY IN BUILDINGS

Utility of Solar energy in buildings concepts of Solar Passive Cooling and Heating of Buildings. Low Energy Cooling. Symbolic problem to calculate solar energy from solar panels. Case studies of Solar Passive Cooled and Heated Buildings.

WATER CONSERVATION AND AUDIT

Storm water management to maintain natural hydrologic cycle, runoff according to land use, reduce storm water runoff – low impact development, bio retention facilities, rainwater capture, permeable pavements. Rainwater harvesting – importance, benefits, rain barrels, dry and wet system, methods of rainwater harvesting. Symbolic problems on annual rainwater potential of roof tops. Recycling and reuse of wastewater – types of treatment and their advantages. Management of Sullage Water and Sewage. Approaches, steps and benefits of water audit.

Overview of concepts of solid waste management – types of waste, collection of waste, recycling or disposal options, reducing waste generation. **08 Hrs**

UNIT V

BUILDING MATERIALS AND RESOURCES

Life cycle assessment of buildings – concept, need and advantages. Integrated Life cycle design of Materials and Structures. Importance of embodied energy in selection of sustainable materials. Utilization of industrial waste for green buildings – waste classification, by-product waste, organic wastes, mineral waste, agricultural waste, construction demolition waste. Use of certified green building materials, products, and equipment.

INDOOR ENVIRONMENTAL QUALITY

Occupants' health and well-being – indoor comfort, daylight, indoor air quality, temperature, humidity, ventilation, lighting, acoustics. CO2 monitoring and low emitting materials. **08 Hrs**

TEXT BOOKS :

1.	Harihara Iyer G	Green Building Fundamentals, ISBN 13: 979-8886416091, Notion Press, 2022

REFERENCE BOOKS:

1.	Dr. Adv. Harshul Savla	Green Building: Principles & Practices, ISBN13: 978-1685866044, 2021
2.	Indian Green Building Council	IGBC Green New buildings rating system, version 3.0, 2016

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

1. **Critique** on the effects of climate change, global warming and SDGs.
2. **Apply** concepts of green building design and green building rating systems to design buildings**.**
3. **Appraise** the principles of passive design and sustainable architecture.
4. **Evaluate** the benefits of solar passive design and efficient water management systems.
5. **Apply** life cycle assessment methods, integrated life cycle design and principles for enhancing indoor environment quality in designing green 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												3			
	CO2	2						3						3			
	CO3	3						3						3			
	CO4	3						3						3			
	CO5	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	:	8ARPE	Exam Mode	:	Term Work

ARE6: Rural Planning & Infrastructure

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.

COURSE OUTLINE:

This elective is to introduce students to understand the difference between Urban and Rural settlements and to understand the rural physical setting wrt social and economical aspects. The students shall understand the process of documenting the rural settlement, its physical setting, Occupation structure and living environment. The infrastructural requirements and incentives by government towards rural development will be studied.

ARE7: Bio-Mimicry

Course Objectives: This course will enable students to:

1. Understand the concept of 'Biomimicry' in architecture.
2. Reconnect with nature: learning to observe nature by function.
3. Explore how biology can be integrated with nature inspired design.
4. Examine how 'biomimicry approach' can influence sustainable designs and innovations.

COURSE OUTLINE:

This elective is to introduce students to understand Biomimicry 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.

ARE8: Architectural Conservation

Course Objectives: This course will enable students to:

1. Get introduced to the various aspects of Heritage and its conservation
2. Realize the importance of heritage documentation, consolidation and analysis of data
3. Understand various Heritage management systems and integrated conservation approach

COURSE OUTLINE:

This elective is to introduce students to understand Heritage and the need for conservation of historical structures. The students shall understand the process to be followed for conserving any heritage structures, the conventions and charters which defines the guidelines nationally and internationally will for responsible protection of heritage.

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	
	CO2	3														3	

	CO3	**3**													**3**	

SCIENTIFIC FOUNDATIONS OF HEALTH

Contact Hours/Week	:	01	Credits	:	1.0
Total Lecture Hours	:	15	CIE Marks	:	50
Total Tutorial Hours	:	--	SEE Marks	:	50
Course Code	:	CC07-AT	Exam Mode	:	Theory

Course Objectives: This course will enable students to:

1. Know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
2. Build the healthy lifestyles for good health for their better future.
3. Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
4. Learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
5. Prevent and fight against harmful diseases for good health through positive mindset

UNIT I

Good Health &its balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, Psychological disorders- Methods to improve good psychological health, changing health habits for good health. **03 Hrs**

UNIT II

Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components for health, Wellness and physical function, How to avoid exercise injuries **03 Hrs**

UNIT III

Creation of Healthy and caring relationships : Building communication skills, Friends and friendship - Education, the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviors through social engineering. **03 Hrs**

UNIT IV

Avoiding risks and harmful habits: Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive people and non addictive people & their behaviors. Effects of addictions, how to recover from addictions. **03 Hrs**

UNIT V

Preventing & fighting against diseases for good health: How to protect from different types of infections, How to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status. **03 Hrs**

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Contents related activities (Activity-based discussions)
- For active participation of students instruct the students to prepare Flowcharts and Handouts
- Organizing Group wise discussions Connecting to placement activities
- Quizzes and Discussions, Seminars and assignments

TEXT BOOKS:

1.	"Scientific Foundations of Health" – Study Material Prepared by Dr. L Thimmesha, Published in VTU-University Website.
2.	"Scientific Foundations of Health", (ISBN-978-81-955465-6-5) published by Infinite Learning Solutions, Bangalore – 2022.
3.	Health Psychology - A Textbook, FOURTH EDITION by Jane Ogden McGraw Hill Education (India) Private Limited - Open University Press.

REFERENCE BOOKS:

1.	Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor	Health Psychology (Second edition) , Routledge 711 Third Avenue, New York, NY 10017.
2.	SHELLEY E. TAYLOR	HEALTH PSYCHOLOGY (Ninth Edition) , McGraw Hill Education (India) Private Limited - Open University Press
3.		SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos and other materials / notes.
4.		Scientific Foundations of Health (Health & Welness) - General Books published for university and colleges references by popular authors and published by the reputed publisher.

Course Outcomes: Students will be able to:

1. **Understand** and analyze about Health and wellness (and its Beliefs) &its balance for positive mindset.
2. **Develop** the healthy lifestyles for good health for their better future.
3. **Build** a Healthy and caring relationships to meet the requirements of good/social/positive life.
4. **Learn** about Avoiding risks and harmful habits in their campus and outside the campus for their bright future.
5. **Prevent** and fight against harmful diseases for good health through positive mindset.

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