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ANNA UNIVERSITY, CHENNAI

UNDERGRADUATE CURRICULUM (NON-AUTONOMOUS AFFILIATED INSTITUTIONS)

Programme: B. Arch.

Regulations: 2025

Abbreviations:

Category

PC – Professional Core

PE – Professional Elective

BS & AE – Basic Sciences & Applied Engineering

PAE – Professional Ability Enhancement

SD – Skill Development

SL – Self Learning

HUM – Humanities (including Languages and others)

Course Type

S - Studio

T – Theory

TS – Theory cum Studio

IT – Internship Training

LIT – Laboratory Integrated Theory

TCP – Total Contact Period(s)

L – Lecture

P – Practical

T – Tutorials

S - Studio

1. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- I. Become a practicing architect who can provide holistic and innovative solutions to needs and problems of society.
- II. Find gainful employment in architectural firms/ building sector and contribute in design and decision making.
- III. Be a part of organisations that influence policy and contribute to larger changes in society and environment.
- IV. Contribute to the discipline of architecture through higher studies, research and development.
- V. Become a thinker and entrepreneur who can direct creative vision, explorations, services and products towards a better future in an interconnected world.

2. PROGRAMME OUTCOMES (POs)

- 1 **Analysis and Design Skill** : Analyse and design architectural projects of all scales in a competent, innovative and appropriate manner as the situation demands.
Understanding of Form and Architecture: Represent, understand and analyse
- 2 forms and attributes of architecture in different ways (manual/ graphic/ diagrammatic/ digital means) so as to inform the architectural design process.

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- 3 **Ability for Cognition, Expression and Communication:** Understand situations through experience and express ideas through various modes- reading, writing, speaking, art, cognitive mapping, etc., that are consistent with the self and the
- 4 **Historical, Social and Cultural Awareness:** Identify/ analyse/ understand with sensitivity the various cultural, social and historical aspects of architecture as well as make meaningful and contextual design decisions.
- 5 **Critical and Creative Thinking:** Critically understand/ theorise existing situations and make positive creative transformations towards the future.
- 6 **Knowledge in Making of Building:** Understand and contribute to constructional aspects of buildings involving material strength and choice, building component and structural design.
- 7 **Support and Services to Buildings:** Understand and work out basic and advanced services for a building in an optimal manner so as to enhance the quality
- 8 **Environment and Physical Context:** Understand the relationships between environment and architecture and design livable buildings that are sensitive to as well as tap the potential of the environment at different scales.
- 9 **Skill in Building Analysis and Optimisation of Design:** Calculate/analyse building costs and environmental performance and optimise design for varied
- 10 **Profession and Ethics:** Serve as a competent and ethical professional architect.
- 11 **Life Long Learning, Research and Development:** Understand and address specific aspects of the discipline of architecture in depth through rigorous exploratory and experimental studies and research.
- 12 **Larger contribution to Society:** Understand broader interdisciplinary connections with architecture and engage them to serve as a catalyst for positive change.

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Semester – I							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.	AR25101	Introduction to Architecture	T	3-0-0	3	3	PC
2.	AR25C01	Introduction to Language and English Skills	T	3-0-0	3	3	HUM
3.	AR25102	Mathematics for Architects	T	3-0-0	3	3	BS
4.	UC25H01	தமிழர் மரபு / Heritage of Tamils	T	1-0-0	1	1	HUM
5.	AR25103	Geometrical Drawing	TS	1-0-3	4	4	PC
6.	AR25104	Art as Cognition and Expression	S	0-0-4	4	4	PC
7.	AR25105	Foundational Design Studio	S	0-0-9	9	9	PC
				Total	27	27	

Semester – II (Prerequisite - Pass in Foundational Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.	AR25201	World Architecture: Early Civilizations to Renaissance	T	3-0-0	3	3	PC
2.	AR25202	Structural Mechanics	T	3-0-0	3	3	BS
3.	AR25203	Environmental Studies	T	3-0-0	3	3	BS
4.	AR25204	Building Components and Measured Drawing	TS	1-0-3	4	4	PC
5.	AR25205	Tools for Design Thinking	S	0-0-4	4	4	PC
6.	UC25H02	தமிழர்களும் தொழில்நுட்பமும் / Tamils and Technology	T	1-0-0	1	1	HUM
7.	AR25206	Basic Space Design Studio	S	0-0-9	9	9	PC
8.		NCC / NSS / NSO	---	---	---	---	---
				Total	27	27	

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Semester – III (Prerequisite - Pass in Basic Space Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.	AR25301	Architecture in India: Early Civilizations to Mughal Period	T	3-0-0	3	3	PC
2.	AR25302	Structural Systems and their Analysis	T	3-0-0	3	3	BS
3.	AR25303	Climate and Built Environment	T	3-0-0	3	3	BS
4.	AR25304	Non-Structural Building Elements and Finishes	TS	1-0-3	4	4	PC
5.	AR25305	Digital Drawing, Visualisation and Representation	TS	1-0-3	4	4	SD
6.	AR25306	Advanced Space Design Studio	S	0-0-9	9	9	PC
				Total	26	26	

Semester – IV (Prerequisite - Pass in Advanced Space Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.	AR25401	Regional and Vernacular Built Environments in India	T	3-0-0	3	3	PC
2.	AR25402	Structural Design of Masonry and Timber	T	3-0-0	3	3	BS
3.	AR25403	Water Supply and Sanitation in Buildings	TS	2-0-2	4	4	BS
4.	AR25404	Building Construction with Basic Materials	TS	1-0-3	4	4	PC
5.	AR25405	Site Surveying and Planning	TS	1-0-3	4	4	PC
6.	AR25406	Rural Habitat Design Studio	S	0-0-9	9	9	PC
				Total	27	27	

Semester – V (Prerequisite - Pass in Rural Habitat Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods /Week		Credits	Category
				L-T- P/S	TCP		
1.		Architecture and Urbanism of Colonialism and Modernity	T	3-0-0	3	3	PC
2.		Structural Design of Concrete	T	3-0-0	3	3	BS
3.		Electricity, Lighting and Fire Safety in Buildings	TS	2-0-2	4	4	BS
4.		Concrete in Building Construction	TS	1-0-3	4	4	PC

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Semester – V (Prerequisite - Pass in Rural Habitat Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
5.		Professional Elective I	-	X-X-X	3	3	PE
6.		Industry Oriented Course - I	-	X-X-X	X	1	SD
7.		Urban Architecture Design Studio	S	0-0-10	10	10	PC
				Total	27	28	

Semester – VI (Prerequisite - Pass in Urban Architecture Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.		Specification, Estimation and Budgeting	T	3-0-0	3	3	PC
2.		Structural Design of Steel	T	3-0-0	3	3	BS
3.		Advanced Building Services	TS	2-0-2	4	4	BS
4.		Steel, Glass and Plastic in Building Construction	TS	1-0-3	4	4	PC
5.		Professional Elective – II	-	X-X-X	3	3	PE
6.		Industry Oriented Course -II	-	X-X-X	X	1	SD
7.		Environmental Design Studio	S	0-0-10	10	10	PC
				Total	27	28	

Semester – VII (Prerequisite - Pass in Environmental Design Studio)							
S. No.	Course Code	Course Name	Course Type	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.		Contemporary Architecture: Theories and Practice	T	3-0-0	3	3	PC
2.		Professional Practice of Architecture	T	3-0-0	3	3	PAE
3.		Contemporary Housing	T	3-0-0	3	3	PC
4.		Design Process and Thinking	T	3-0-0	3	3	PC
5.		Professional Elective – III	-	X-X-X	3	3	PE
6.		Critical Design Studio	S	0-0-11	11	11	PC
				Total	26	26	

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Semester – VIII							
S. No.	Course Code	Course Name	Course Type [#]	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1		*Educational Tour	T	X-X-X	X	1	
Total						1	

*Educational Tour to be conducted during VI - VII Semester vacation or VII - VIII Semester vacation for a minimum of 2 weeks duration

Semester – VIII / IX							
If offered in SEM VIII - Prerequisite - Pass in Critical Design Studio of VII Semester / If offered in SEM IX - Prerequisite - Pass in Urbanism & Architecture Design Studio of VIII SEM							
S. No.	Course Code	Course Name	Course Type [#]	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1		Practical Training	T	X-X-X	X	26	PAE
Total						26	

Semester – VIII / IX							
If offered in SEM VIII - Prerequisite - Pass in Critical Design Studio of VII Semester / If offered in SEM IX - Prerequisite - Pass in Urbanism & Architecture Design Studio of VIII SEM							
S. No.	Course Code	Course Name	Course Type [#]	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.		Urban Design	T	3-0-0	3	3	PC
2.		Landscape and Ecology	T	3-0-0	3	3	PC
3.		Construction and Project Management	T	3-0-0	3	3	PAE
4.		Dissertation	T	0-0-3	3	3	PAE
5.		Professional Elective – IV	T	X-X-X	3	3	PE
6.		Urbanism and Architecture Design Studio	S	0-0-11	11	11	PC
Total					26	26	

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SEMESTER X (Prerequisite - Pass in Practical Training of IX Semester / Pass in Urbanism and Architecture Design Studio of IX Semester as applicable)							
S. No.	Course Code	Course Name	Course Type [#]	Periods / Week		Credits	Category
				L-T- P/S	TCP		
1.		Professional Elective – V	T	X-X-X	3	3	PE
2.		Thesis	S	0-0-23	23	23	PC
Total					26	26	

Total Credits of the Programme: 268

PROFESSIONAL ELECTIVE COURSES – STREAMS

Sem & Elective	Design Process and Practice	Energy & Technology in Buildings	Architectural Tectonics	Digital Design Process	Urban Studies	Allied – Art, Design and Writing
Sem V PE - 1	Design Detailing	Sustainable Design	Structure in Architecture	Contemporary Processes in Architectural Design	Human Behaviour and Built Environment	Product Design
Sem VI PE - 2	Space Syntax in Architectural Design	Climatic Design Procedures	Earthquake Resistant Architecture	Parametric Modelling and Coding	Disaster Management	Interior Design
Sem VII PE - 3	Soft Skills	Digital Tools for Building Modelling and Analysis	Contemporary Building Materials	Digital Fabrication and Architecture	History of Tamil Nadu	Art Appreciation
					History of Non-Western Architecture	Theatre and Architecture
Sem VIII/IX PE - 4	Design Communication	Building Automation and Control Systems	Construction Technology	Data Visualisation and Analysis	Heritage Conservation	Techniques of Digital Art
Sem X PE - 5	Professional Service Firm: Management and Excellence	Green Building	Advanced Structures	Artificial Intelligence in Design Process	Smart Cities	Architectural Journalism and Photography
					Human Settlements Planning	

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PROFESSIONAL ELECTIVE (PE)

S. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
PROFESSIONAL ELECTIVE I – (PE-1)								
1.		Design Detailing	PEC	1	0	2	3	3
2.		Sustainable Design	PEC	3	0	0	3	3
3.		Structure in Architecture	PEC	3	0	0	3	3
4.		Contemporary Processes in Architectural Design	PEC	1	0	2	3	3
5.		Human Behaviour and Built Environment	PEC	2	0	1	3	3
6.		Product Design	PEC	1	0	2	3	3
PROFESSIONAL ELECTIVE II- (PE-2)								
1.		Space Syntax in Architectural Design	PEC	3	0	0	3	3
2.		Climatic Design Procedures	PEC	1	0	2	3	3
3.		Earthquake Resistant Architecture	PEC	3	0	0	3	3
4.		Parametric Modelling & Coding	PEC	3	0	0	3	3
5.		Disaster Management	PEC	3	0	0	3	3
6.		Interior Design	PEC	2	0	1	3	3
PROFESSIONAL ELECTIVES III & IV- (PE-3)								
1.		Soft Skills	PEC	3	0	0	3	3
2.		Digital Tools for Building Modelling and Analysis	PEC	1	0	2	3	3
3.		Contemporary Building Materials	PEC	3	0	0	3	3
4.		Digital Fabrication and Architecture	PEC	3	0	0	3	3
5.		History of Tamil Nadu	PEC	3	0	0	3	3
6		History of Non-Western Architecture	PEC	3	0	0	3	3
7.		Art Appreciation	PEC	2	0	1	3	3
8.		Theatre and Architecture	PEC	3	0	0	3	3
PROFESSIONAL ELECTIVE V- (PE-4)								
1.		Design Communication	PEC	1	0	2	3	3
2.		Building Automation and Control Systems	PEC	3	0	0	3	3

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3.		Construction Technology	PEC	3	0	0	3	3
4.		Data Visualisation and Analysis	PEC	2	0	1	3	3
5.		Heritage Conservation	PEC	3	0	0	3	3
6.		Techniques of Digital Art	PEC	1	0	2	3	3
PROFESSIONAL ELECTIVE VI- (PE-5)								
1.		Professional Service Firm: Management and Excellence	PEC	3	0	0	3	3
2.		Green Building	PEC	3	0	0	3	3
3.		Advanced Structures	PEC	3	0	0	3	3
4.		Artificial Intelligence in Design Process	PEC	3	0	0	3	3
5.		Smart Cities	PEC	3	0	0	3	3
6.		Human Settlements Planning	PEC	3	0	0	3	3
7.		Architectural Journalism and Photography	PEC	2	0	1	3	3

Semester I

AR25101	Introduction to Architecture	L	T	P/S	C
		3	0	0	3
Course Objectives: • To give understanding of architecture as an outcome of the act of design by human society across history and region. • To give an introduction to the discipline of architecture and its various facets. • To introduce importance of form and its relation to design through study of nature and manmade environment. • To introduce the vocabulary of form and space in terms of elements, principles, attributes and organisation as giving cognitive experience in the realm of architecture.					
Introduction to Architecture: Origin and definitions of architecture as need based, cultural, environmental, social, psychological response of human society. Architecture as phenomenological mediation of nature. Components of architecture: use, means, site, shelter, relation to nature, structure, skin, materials, services, circulation, typology, aesthetics, expression, character, symbolism, experience, etc., History and types of design in architecture- unself-conscious/ self-conscious design, design through craft/ design through drawing, pragmatic/ iconic/ canonic/ analogic design. 9 periods					
Form in Nature and Manmade Environment: Understanding form in all its attributes as the basis of creating architecture. Characteristics of form and its relationship with use/function/evolution as manifested in first hand examples from nature and everyday manmade environment including artefacts, objects buildings, cityscapes. Human body and sensory environment. Cognitive experience of form- ideas of Gestalt, visual perception, proxemics. Tactile, auditory, olfactory senses and human environment. 9 periods					
Form as geometric Elements and their effects: Form as embodied in and/or constituted by geometric elements such as point, line, plane, volumes. Attributes, generation and interrelationships among elements. Perceptual effects and use of specific manifestations of the elements- planes as shapes and volumes as geometric forms/space such as sphere, cube, pyramid, cylinder, cone and their sections/ derivatives. Architectural use of elements. Exercises and architectural case studies. 9 periods					
Attributes and Principles of Form: Form as manifesting attributes such as pattern, light, colour, surface, texture. Effects of these attributes. Form in its basic state, in combinations, composite organisations and configurations as manifesting characteristics such as proportion, scale, balance, symmetry, asymmetry, rhythm, axis, hierarchy, datum, unity, harmony, dominance, climax, focus. Characteristics acting as principles to generate architectural design. Exercises and architectural case studies. 9 periods					

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Organisation of Form and Space: Cognitive experience of form and space in architecture –enclosure, internal and external spaces, continuous spaces, hierarchy of spaces, spatial organisation (centralised, linear, radial, clustered, grid), built form- open space relationships. Relationship of movement/ circulation/ path with reference to architectural form and space. Haptic experience. Exercises and architectural case studies.

9 periods

Total: 45 periods

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Required Reading

- Geoffrey Broadbent, 'Design in Architecture - Architecture and the Human Sciences', D.Fulton, 1988.
- Francis D.K. Ching, Architecture – Form, Space and Order, Wiley, 2023 (5th Edition).
- V. S. Pramdar, Design Fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Delhi, 1997 (3rd Edition)
- Yatin Pandya, Elements of Spacemaking, Mapin Publishing Pvt. Ltd., May 8, 2024
- Francis D.K. Ching, James F. Eckler, 'Introduction to Architecture', Wiley, 2012.
- Robert McCarter, Juhani Pallasmaa, 'Understanding Architecture', Phaidon 2012.

References:

1. von Meiss, P. (1990). *Elements of architecture: From form to place*. Routledge.
2. Arnheim, R. (2009). *The dynamics of architectural form*. University of California Press.
3. Prak, N. (2017). *The language of architecture*. De Gruyter Mouton.
4. Roth, L. M. (2018). *Understanding architecture: Its experience, history, and meaning*. Routledge.
5. Conway, H. (2005). *Understanding architecture: An introduction to architecture and architectural history*. Routledge.
6. Johnson, P. A. (1994). *The theory of architecture: Concepts and themes*. Van Nostrand Reinhold Co.
7. Vyas, K. (2009). *Design and environment: A primer*. National Institute of Design.
8. Simon Unwin, *Analysing Architecture*, Routledge, London, 2021 (5th Edition).
9. Peter Zumthor, 'Thinking Architecture', Birkhäuser, 2010 (3rd Edition).
10. Samuel B. Frank, 'Modern Architecture since 1900, Modern Architecture and Design: An Alternative History', ebook, MIT Press, 1983

E - Resources

- NPTEL course – Introduction to Architecture - https://onlinecourses.nptel.ac.in/noc23_ar01/preview
- NPTEL course - Modern Indian Architecture - https://onlinecourses.nptel.ac.in/noc25_ar15/preview

	Description of CO	PO1	PO2	PO3	PO4
CO1	Ability to recognise different facets of architecture.	1	3	2	2
CO2	Basic understanding of form and design in all aspects and scales.	1	3	2	2
CO3	Ability to discern the relationship between manifestations of form and its effects on humans	1	3	2	2
CO4	Ability to perceive basic geometric elements as components of form	2	3	1	1

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AR25C01	Introduction to Language and English Skills	L 3	T 0	P/S 0	C 3
Course Objectives: - To give an introduction to the concepts and evolution of language in human society including its various expressions and functions - To give basic skills of English language in everyday situations involving speaking, listening, reading, writing, presenting. - To enable the use of language to think, express experience and communicate larger meaning.					
Introduction to Language and Linguistics: communication in humans and animals. language in humans– definition, function and hypotheses of evolution. some concepts of language- phonetics, phonology, morphology, syntax, semantics, pragmatics. 9 periods					
English- Speaking and Listening: Everyday Communication and Human Interaction Through Language. Speaking and Listening. Simple Class Exercises. 9 periods					
English- Reading, Writing, Presenting: Reading and Writing. Language Comprehension Skills through Reading and Writing. Presenting Information and Ideas. Simple Exercises. 9 periods					
Language as Expression and Cognition : Language as Expression – Poetry, Prose, Literature, Etc., Cognitive Function of Language. Cognitive Role of Language in Constructing Reality, Abstracting, Projecting the Future. Simple Exercises. 9 periods					
Language as Discourse: Thinking, Talking and Writing About Ideas and Situations Within a Social Context and Conveying Broader Meaning and Abstraction. Discourse, Dialectic. Simple Class Exercises. 9 periods Total : 45 periods					
Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.					
Assessment Methodology: Two Assessments with equal weightage. One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.					
Required Reading - Sharon Hendenreich, 'English for Architects and Civil Engineers', Springer, 2014 N. Chomsky, 'Reflections on Language', Fontana, 1975. - Steve Pinker, 'The Language Instinct', Penguin, 2015.					

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- R.L. Trask, 'Language and Linguistics: The Key Concepts', Routledge, 2007.
- R.L. Trask, 'Language: The Basics', Routledge 1999

E –resources

1. Cambridge English – <https://www.cambridgeenglish.org/learning-english/grammar-and-vocabulary/>
2. Perfect English Grammar – <https://www.perfect-english-grammar.com/>
3. British Council – Learn English - <https://learnenglish.britishcouncil.org/grammar>
4. Speechling – <https://speechling.com/>
5. mePro by Pearson – <https://mepro.pearson.com/>
6. TED Talks – <https://www.ted.com/>

	Description of CO	PO3	PO5
CO1	An understanding of basic role of language in humans.	3	2
CO2	Skill and confidence in everyday requirements of the English language.	3	2
CO3	Ability to express experience, explore meaning and construct reality through language.	3	2

AR25102	Mathematics for Architects	L	T	P/S	C
		3	0	0	3
Course Objectives: • To help derive solutions involving trigonometric and exponential functions in practical problems. • To inform about three dimensional analytical geometry. • To enable understanding of functions of more than one variable. • To give information to solve differential equation of certain type. • To enable data analysis and interpretation of results using statistical tools.					
Trigonometry and Mensuration: Trigonometric (sine, cosine and tan functions) and exponential functions. De- Moiver's theorem. Area of plane figures. Computation of volume of solid figures. 9 periods					
Three Dimensional Analytical Geometry: Direction cosines and ratios. Angle between two lines. Equations of a plane. Equations of a straight line. Coplanar lines. Shortest distance between skew lines. Sphere, Tangent plane, Plane section of a sphere. 9 periods					
Integration and Functions of Two Variables: Integration of rational, trigonometric and irrational functions. Properties of definite integrals. Reductions formulae for trigonometric functions. Taylor's Theorem - Maxima and Minima (Simple Problems). 9 periods					
Ordinary Differential Equations: Linear equations of second order with constant coefficients. Simultaneous first order linear equations with constant coefficients. Homogeneous equation of Euler type. Equations reducible to homogeneous form. 9 periods					
Basic Statistics and Probability: The arithmetic mean, median, mode, standard deviation and variance. Regression and correlation. Elementary probability. Laws of addition and multiplication of probabilities. Conditional probability. Independent events. 9 periods Total: 45 periods					
Weightage: Continuous Internal Assessment: 40%, End Semester Examinations:60%.					
Assessment Methodology: Two Assessments with equal weightage. One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.					
Required Reading • Grewal B.S., 'Higher Engineering Mathematics', Khanna Publishers, New Delhi, 44th Edition, 2011.					

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- T Veerarajan., ' Engineering Mathematics ', Tata McGraw-Hill Publishers , 3rd edition, 2012.
- Murray R Spiegel., Larry J Stephens, 'Schaum's outlines of Theory and Problems of Statistics', 4th edition , Schaum's outline series and McGraw –Hill publishers , 2008.

References:

1. Bali, N., Goyal, M., & Watkins, C. (2009). Advanced engineering mathematics (7th ed.). Firewall Media (An imprint of Lakshmi Publications Pvt. Ltd.).
2. Ramana, B. V. (2010). Higher engineering mathematics (11th reprint). Tata McGraw Hill Co. Ltd.
3. Greenberg, M. D. (2009). Advanced engineering mathematics (2nd ed., 5th reprint). Pearson Education.
4. Gupta, S. C., & Kapoor, V. K. (1996). Fundamentals of mathematical statistics (9th ed.). Sultan Chand and Sons.
5. Sivaramakrishna Das, P., & Vijayakumari, C. (2017). Engineering mathematics. Pearson India Education Services Pvt. Ltd.
6. Vittal, P. R. (2002). Mathematical statistics. Margham Publishers.

E –resources:

1. <https://www.math.utah.edu/lectures/math1060.php>
2. <https://www.youtube.com/watch?v=WUvTyaaNkzM&list=PLZHQObOWTQDMsr9K-rj53DwVRMYO3t5Yr>
3. <https://www.youtube.com/watch?v=XDhJ8lVGbl8&list=PLEC88901EBADDD980>
4. <https://www.youtube.com/watch?v=KbB0FjPg0mw&list=PL2SOU6wwxB0uwwH80KTQ6ht66KWxbzTlo>

	Description of CO	PO2	PO6	PO10
CO1	Ability to understand the mathematical properties of geometric figures and objects.	2	3	2
CO2	Skill in solving mathematical problems that would be useful for the field of architecture.	2	3	2
CO3	Ability to analyse and interpret data.	2	3	2
CO3	Ability to understand basics of statistics functions	2	2	1
CO4	Ability to interpret datasets or variables	2	3	2

UC25H01	தமிழர் மரபு	L 1	T 0	P 0	C 1
மொழி மற்றும் இலக்கியம்: இந்திய மொழிக் குடும்பங்கள், திராவிட மொழிகள், தமிழ் ஒரு செம்மொழி, தமிழ் செவ்விலக்கியங்கள், சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை, சங்க இலக்கியத்தில் பகிர்தல் அறம், திருக்குறளில் மேலாண்மைக் கருத்துக்கள், தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம், பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள், சிற்றிலக்கியங்கள், தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி, தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.					
மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை - சிற்பக்கலை: நடுகல் முதல் நவீன சிற்பங்கள் வரை, ஐம்பொன் சிலைகள், பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் , தேர் செய்யும் கலை, சுடுமண் சிற்பங்கள், நாட்டுப்புறத் தெய்வங்கள், குமரிமுனையில் திருவள்ளுவர் சிலை, இசைக் கருவிகள், மிருதங்கம், பறை, வீணை, யாழ், நாதஸ்வரம், தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு.					
நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்: தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோல்பாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.					
தமிழர்களின் இணைக் கோட்பாடுகள்: தமிழகத்தின் தாவரங்களும், விலங்குகளும், தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள், தமிழர்கள் போற்றிய அறக்கோட்பாடு, சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும், சங்ககால நகரங்களும் துறை முகங்களும், சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி, கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி.					
இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு: இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு, இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் , சுயமரியாதை இயக்கம் இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு, கல்வெட்டுகள், கையெழுத்துப்படிகள், தமிழ்ப் புத்தகங்களின் அச்ச வரலாறு.					
References: 1. தமிழக வரலாறு, மக்களும் பண்பாடும், கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்). 2. கணினித் தமிழ், முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). 3. கீழடி, வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) 4. பொருறை, ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு) 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print) 6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies). 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies). 8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.) 9. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author) 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.					

UC25H01	Heritage of Tamils	L	T	P	C
1		1	0	0	1
Language and Literature: Language Families in India, Dravidian Languages, Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature, Distributive Justice in Sangam Literature, Management Principles in Thirukural, Tamil Epics and Impact of Buddhism & Jainism in Tamil Land, Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil, Contribution of Bharathiyaar and Bharathidhasan.					
Heritage - Rock art Paintings to Modern Art – Sculpture: Hero stone to modern sculpture, Bronze icons, Tribes and their handicrafts,- Art of temple car making, Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments, Mridhangam, Parai, Veenai, Yazh and Nadhaswaram, Role of Temples in Social and Economic Life of Tamils.					
Folk and Martial Arts: Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils					
Thinai Concept of Tamils : Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature, Aram Concept of Tamils, Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age, Export and Import during Sangam Age - Overseas Conquest of Cholas.					
Contribution of Tamils to Indian National Movement and Indian Culture: Contribution of Tamils to Indian Freedom Struggle, The Cultural Influence of Tamils over the other parts of India, Self-Respect Movement, Role of Siddha Medicine in Indigenous Systems of Medicine, Inscriptions & Manuscripts, Print History of Tamil Books.					
References: 1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்). 2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). 3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) 4. பொருறை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு) 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print) 6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies). 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies). 8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.) 9. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author) 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.					

Padeepz App - For Anna University

AR25103	Geometrical Drawing	L	T	P/S	C
		1	0	3	4
Course Objectives: • To introduce geometrical understanding as one of the bases of architecture. • To give an understanding of basic and derived geometry of form in terms of their generation and attributes. • To give skills of representation of forms in terms of technical drawing and projections.					
Relation between geometry and form. Introduction to point, line, plane, solid. Definition of geometrical drawing. Drawing lines and angles. Drawing shapes/ planar surfaces - triangle, square, rhombus, rectangle, polygon, hexagon, etc). Drawing of circles, tangents, curves, conic sections (hyperbola, parabola, ellipse). Construction of physical planar models of all the above. Viewing the physical planar models from different angles and sketching them with light and shade, shadow as a prelude to understanding the concepts of different types of projections and sciography. Introduction and explanation of terminologies - orthographic, isometric, axonometric, perspective projections and sciography. 10 periods					
Drawing problems on orthographic, isometric and axonometric projections of lines and planes of different types in different positions. Sciography for the same. Types of perspective projections- one point, two point, three point. Terminologies- picture plane, stationary point, vanishing point, cone of vision, eye level, etc., Methods of constructing perspectives. Drawing perspective projections of simple planar surfaces/ shapes. Sciography for the same. 20 periods					
Introduction to geometric solids- cube, prism, pyramids, cones, cylinders. Generation of geometric solids through construction of physical models from lines and planar surfaces (including concept of development). Construction of block models of solids. Viewing the models from different angles and sketching them with light and shade, shadow in order to understand them in different types of projections. Drawing problems on orthographic, isometric and axonometric projection of solids of different types in different positions. Sciography for the same. Perspective projection of simple solids. Sciography for the same 20 periods					
Understanding sections of solid and true shape of sections through cutting of block models, viewing them from different angles and sketching them. Understanding simple intersection of solids and composite forms through making block models and viewing them from different angles and sketching them. Simple drawing problems on orthographic, isometric and axonometric projection of the above. 10 periods					
Total : 60 periods					

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Weightage:

Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

End Semester examination duration: 4 hours

Assessment Methodology:

Three Assessments with equal weightage.

One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage - 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

Required reading

- Morris I.H., 'Geometrical Drawing for Art Students', Orient Longman, Madras, 2004.
- Francis D. K. Ching, 'Architectural Graphics', John Wiley and Sons, 2012.
- Natarajan K.V, 'A Textbook of Engineering Graphics', Dhanalakshmi Publishers, Chennai, 2006.

References:

1. Martin, L. C. (1978). Architectural graphics. Macmillan.
2. Reekie, F. (1999). Reekie's architectural drawing. Viva Books Private Limited.
3. Burrows, R. (2018). 3D thinking in design and architecture. Thames and Hudson.
4. Bhatt, N. D. (2023). Engineering drawing (54th ed.). Charotar Publishing House Pvt. Ltd.
5. Grant, H. E. (2014). Engineering drawing. McGraw-Hill Book Company.
6. Taffesse, W., & Kessaa, L. M. (2005). Engineering drawing.
7. Mulir, S. (1994). Perspective and sciography. Allied Publishers Ltd.
8. White, G. (2003). Perspective: A guide for artists, architects and designers. Batsford (Anova Books Imprints).

E - Resources:

1. <https://link.springer.com/book/10.1007/978-981-10-5358-0> - A First Course in Engineering Drawing Textbook , 2018
2. https://openlibrary.org/works/OL10569620W/Geometrical_drawing_for_art_students?edition=key%3A/books/OL59009463M - Geometrical Drawing for Art students , 1967.
3. <https://archive.org/details/sciographyorradi00puck> -Sciography or Radial Projection of shadows by R. Campbell Pucket, 1968

	Description of CO	PO2	PO6
CO1	Ability to understand the relationship between geometry and architectural form.	3	2
CO2	Understanding of various attributes of geometric forms and skill in their creation and dissection.	3	2
CO3	Ability to represent geometric forms through technical drawings.	3	2

AR25104	Art as Cognition and Expression	L	T	P/S	C
		0	0	4	4
Course Objectives: - To give understanding of the role and importance of art as a means of understanding the world. - To give skills in techniques and media of art. - To enable expression of ideas, thoughts and experience through various visual modes both in terms of realism and abstraction.					
Introduction to Art: Origin and evolution of art as human cognition, representation, expression. Role of art. Understanding representation in art - naturalistic, realistic, symbolic, stylistic, abstract, non- objective art, etc., through study of important works across history from different cultures of the world. Looking at common design principles and intersections between art and architecture. Simple studio exercises in basic modes of representation through observation or thought. 10 periods					
Art as Observation and Recording of Human Experience: Properties and uniqueness of different media for art. Studio exercises to observe and record the nature of simple indoor and outdoor subjects through techniques of line, colour, light and shade, texture, etc., using different media- drawing, sketching, painting, sculpture, watercolour, tempera, oil, acrylic, pencils, pastels, crayons, paper, canvas, brush, airbrush, pen and ink, mixed media, clay, Plaster of Paris, wire, papiermache. 20 periods					
Art as Heightened Representation of Reality: Understanding role of art in heightening reality through accentuation of line, colour, light and shade, texture, emphasis, contrast, balance, etc., by the study of examples from the world of art. Comparison between line drawing and form drawing in art and architecture.Studio exercises to understand and bring out the essential characteristics of landscapes, people, places, built environment, situations and objects by heightened reality through appropriate ideas/ tools/techniques. 15 periods					
Art as Abstraction of Reality: The power and role of abstraction as a way of expressing experience and reality through understanding exemplary artists' works and art movements. Studio exercises in abstract expression of real environment, thoughts and emotions through any appropriate media and technique 15 periods Total: 60 Periods					
Weightage: Continuous Internal Assessment: 60%, End Semester Examinations: 40%.					
Assessment Methodology: Three Assessments with equal weightage. Each assessment shal incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage – approx. 33%.					
Required Reading H. Gombrich, 'Art and Illusion', Phaidon, 2002. - E.H. Gombrich, 'The Story of Art', Phaidon, 2002. - ParthaMitter, 'Indian Art', Oxford University Press, 2001.					

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- Nathan Cabot Hale, 'Abstraction in Art and Nature', Dover, 2003.
- Robert L. Solso, 'Cognition and the Visual Arts', MIT Press, 1994.
- Webb, Frank, 'The Artist Guide to Composition', David and Charles, U.K., 1997.
- Francis Ching, 'Drawing a Creative Process', Van Nostrand Reinhold, New York, 1990.
- Lucy Watson, 'Complete Painting and Drawing Handbook', DK Adult, 2009.
- Juhani Pallasmaa, 'The Thinking Hand', John Wiley, 2009.

References:

1. Myers, B. S. (1964). Understanding the arts. Holt, Rinehart and Winston Inc.
2. Kleiner, F. S. (2012). Gardner's art through the ages. Wadsworth Publishing.
3. Dewey, J. (2005). Art as experience. Penguin.
4. Kandinsky, W. (2013). Point and line to plane. Dover.
5. Swann, A. (1997). Graphic design school. HarperCollins.

E -resources:

- <https://www.thoughtco.com/>
- <https://mymodernmet.com/>
- <https://www.thoughtco.com/>
- The Art Story – Art Insight - <https://www.theartstory.org/>
- Drawspace – Free Drawing Lessons - <https://www.drawspace.com/>
(Learn drawing, shading, and sketching techniques step-by-step)

	Description of CO	PO3
CO1	Sensitivity and knowledge of art as basic human endeavour.	3
CO2	Ability and skill to record ideas , thoughts and experience through art.	3
CO3	Ability to abstract thought, observation and experience through art.	3

AR25105	Foundational Design Studio	L	T	P/S	C
		0	0	9	9
Course Objectives: • To give an understanding of design as creating form towards a purpose at various scales. • To enable exploration of the universal visual, experiential and cognitive aspects of design through engaging elements and principles of form. • To give an insight into the ways in which form/ morphology and use/effect can come together. • To give an appreciation of what makes something attractive					
The explorations in the foundational studio would be of two types. One would be to understand and break down form to its component elements and principles in order to get insight into the most important aspects that give a totality of cognitive effect(perceptive, behavioural, cultural etc.,) or use (anthropometrics, activities, scale, etc.,).Design exploration would continue after this to create a form for use/effect. Another would be to explore component elements like point, line, planes, volume, shape, colour, texture light, pattern, etc., using principles such as balance, unity, dominance, transparency, proportion, scale, solid, void, fluidity, movement, fractal, order, chaos, gestalt, etc., This exploration could be an end in itself or could lead to the creation of a higher level of or composite form/design through using elements and principles in conjunction towards human need/ use (perceptive, behavioural, cultural, anthropometrics, activities, scale, etc.,). Architecture as a discipline starts with morphology the study of buildings : their shape, size, layout, proportions, etc. and understanding how each aspect of these relates to the function they serve as the answer to questions and needs of human society. While the needs are multifarious, including shelter and comfort, social and psychological wellbeing, culture and meaning, expression of time and context, etc., the means are negotiated through the fundamentals of form in its various attributes. In the foundational studio, the exploration would be on understanding these fundamentals as universals as well as in terms of particular manifestations in specific cultural and temporal contexts. The word form here means all physical manifested aspects. The whole studio would be conducted through a series of related design exercises with multiple stages as well as standalone independent exercises. Observational/ analytical study and design exploration could go hand in hand or one could precede the other, based on the specific project. The exercises would be mediated through situations and contexts, historic and contemporary references, local or global character, aesthetics, basics of human response and behaviour, etc., Different media would be explored in 2D and 3D. The final exercise(s) would be focussed towards small product/ furniture/ architectural design/ component design in urban context, etc.					
Total: 135 Periods					
Weightage: Continuous Assessment: 60%, End Semester Examinations: 40%.					

Assessment Methodology: Three Assessments with equal weightage.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage - 33.33%.

Required Reading

- Kumar Vyas, 'Design and Environment- A Primer', National Institute of Design, 2009.
- Pierre von Meiss, 'Elements of Architecture: From Form to Place', Routledge, 2014.
- James F. Eckler, 'Language of Space and Form: Generative Terms for Architecture', Wiley, 2012.
- Owen Cappleman and Michael Jack Jordon, 'Foundations in Architecture: An Annotated Anthology of Beginning Design Project', Van Nostrand Reinhold New York, 1993.
- Charles Wallschlag and Cynthia Busic-Snyder, 'Basic Visual Concepts and Principles for Artists, Architects and Designers', McGraw Hill, New York 1992.
- Victor Papanek, 'Design for the Real world, Human Ecology and Social Change', Chicago Review Press, 2005.
- 'Elements of Spacemaking' by Yatin Pandya. ISBN 978180206796 2007 edition Mapin Publishing P Ltd.
- 'Architecture Thought: The Design Process and the Expectant Eye' 2003 edition Ebserier, Architectural Press
- 'Experiencing Architecture' Unwin Simon Routledge 2018.

References:

1. Miyasaka, T. (2013). *Seeing and making in architecture: Design exercises*. Routledge.
2. Pramara, V. S. (1997). *Design fundamentals in architecture*. Somaiya Publications.
3. Ching, F. D. K. (1979). *Architecture: Form, space, and order*. Van Nostrand Reinhold Co.
4. Roth, L. M. (n.d.). *Understanding architecture: Its elements, history, and meaning*. [Publisher info missing—please provide if available].
5. Coates, N. (n.d.). *Narrative architecture*. [Publisher info missing—please provide if available].

E - Resources

1. <https://doi.org/10.4324/9780080454979> - How Designers Think by Bryan Lawson, 2005.
2. <https://www.wiley.com/en-us/Graphic+Thinking+for+Architects+and+Designers%2C+3rd+Edition-p-x000202516> - Graphic Thinking for Designers and Architects by Paul Leasau, 2000
3. <https://doi.org/10.4324/9780203882436> - Understanding Architecture Through the Art of Drawing by Brian Edwards, 2008
4. <https://www.bloomsbury.com/in/basics-design-08-design-thinking-9782940439386/> - Basics Design 08: Design Thinking Gavin Ambrose (Author) , Paul Harris (Author)

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	Description of CO	PO1	PO2	PO3	PO4	PO5	PO12
CO1	Awareness of the totality and components of form in the creation of design.	3	2	2	2	3	3
CO2	Ability to explore the visual/ cognitive language and grammar of the universal elements and principles of design.	3	2	2	2	3	3
CO3	Ability to understand needs as encompassing functional, behavioural, cultural, experiential, etc.	3	2	2	2	3	2
CO4	Ability to engage awareness towards creating a morphology that fulfils stated intents and needs	3	2	2	2	3	2

Semester II

AR25201	World Architecture: Early Civilizations to Renaissance	L	T	P/S	C
		3	0	0	3
Course Objectives: • To introduce the timeline and geography of human societal evolution establishing a context for the study of architecture and urbanism across the historical periods. • To give knowledge about early civilisations and their productions. • To enable an understanding of the architectural contributions of Classical Greece and Rome. • To enable understanding of the intersecting forces in shaping European Architecture and urbanism such as religion, trade, technology, etc. from the decline of Roman empire to the Medieval period To create awareness of the emergence of Renaissance and humanism in Europe and their influence in architecture and urbanism.					
Prehistory to River Valley Civilisations: Chronological phases and geographic spread of human history. Elements and determinants of human settlements. Prehistoric habitats and art. River Valley civilisations of Nile, Indus, Tigris/Euphrates and Yellow River; their geographical context; their political, social, religious, cultural and economic systems; settlement patterns, dwellings and other buildings. 8 periods					
Persia, Greece and Rome: Early Persian empire, its cities and Architectural character. Origin of Greek civilisation. Nature of settlements and dwellings. Political, social, religious, cultural and economic systems. Greek philosophy. Greek polis and democracy. Evolution of the Greek temple and the building of the Acropolis. Public architecture - Theatre and Agora. Other building types. Optical illusions in architecture. Origin of Roman civilization. Nature of settlements and dwellings. Political, social, religious, cultural and economic systems. Republic and Empire. Urban planning. Domestic architecture. Architecture as imperial propaganda. Forums and basilicas. Other building types. Structural forms: materials and techniques of construction spanning large spaces. Political empires of Persia, Greece and Rome and their larger effects. 10 periods					
Judaism, Christianity and Islam: Judaism and Christianity- Birth and geographic spread. Transformation of the Roman Empire. Early Christian worship and burial. Church planning- Basilica concept. Byzantine empire. Centralised plan concept in churches. Birth and spread of Islam in the first millennium. Outline of building types of Islam. Commonality in forms and ideas across Southern/ Eastern Europe and Western/ Central Asia. 9 periods					
Medieval Europe: Outline history of medieval Europe- Population explosion, feudalism and rural manorial life, development of trade/ commerce and medieval cities, rise of nation states and technology of warfare, religious aspects- papacy, monasticism and crusades. Art and architecture in Medieval Europe. Craft and merchant guilds. Domestic					

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Architecture. Romanesque and Gothic architecture including, Vaulting systems. Late medieval Europe and transitions.

9 periods

Renaissance in Europe: Renaissance and Humanism in Europe, its causes and its various facets in society. Trade and exploration. Protestant Reformation. Cities and their transformation. Character and building types of Early Renaissance, High Renaissance, Mannerism, Baroque and Rococo. Renaissance in different nations. Works of Brunelleschi, Michelangelo, Christopher Wren, Andrea Palladio, Inigo Jones.

9 periods

Total: 45 Periods

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Required Reading

- Ching, F. D. K., Jarzombek, M. and Prakash, V, 'A Global History of Architecture', 2nd Ed. John Wiley and Sons, 2010.
- Sir Banister Fletcher, 'A History of Architecture', CBS Publications (Indian Edition), 1999.
- Spiro Kostof, 'A History of Architecture – Setting and Rituals', 2nd Ed, Oxford University Press, 1995.
- Leland M Roth, 'Understanding Architecture: Its Elements, History and Meaning', Westview Press, 2013.

References:

1. Watkin, D. (2015). *A history of western architecture*. Laurence King Publishing.
2. Nervi, P. L. (Ed.). (1972). *History of world architecture series*. Harry N. Abrams.
3. Lloyd, S., & Muller, H. W. (1986). *History of world architecture series*. Faber and Faber.
4. Samdstrom, G. E. (1975). *Man the builder*. McGraw Hill Book Company.
5. Scully, V. (1991). *Architecture: The natural and the man-made*. Harper Collins.

E-Resources

- <https://doi.org/10.4324/9780203449509> - Ancient architecture (History of world Architecture series) – Seton Lloyd Early Civilizations of the Old World The Formative Histories of Egypt, The Levant, Mesopotamia, India and China, 1999
- <https://catalog.hathitrust.org/Record/000451390> - Greek buildings- represented by fragments – by W.R. Lethaby . 1990.
- https://www.electa.it/en/?post_type=es_product&s&type=es_product_book - Ancient architecture (History of world Architecture series) 2003
- https://archive.org/details/classicalarchite0000gabr_t7r6 - Classical Architecture for the 21st Century - Jean-Francois Gabriel, 2004.

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	Description of CO	PO4	PO5
CO1	Ability to understand overall the timelines and early history of civilizations and their contributions across the world.	3	2
CO2	Knowledge about the contributions of Greece and Rome to architecture and urbanism.	3	2
CO3	Familiarity with the intersecting forces in Europe from decline of Roman empire to Medieval times and their manifestation in cities and architecture.	3	2
CO4	An understanding of Renaissance and humanism and the resultant architecture and urbanism	3	2

AR25202	Structural Mechanics	L	T	P/S	C
		3	0	0	3
Course Objectives: - To give familiarity about structural resolutions and its important in realisation of architectural design concepts - To give exposure to forces, moments and resolution of forces. - To give understanding of geometrical properties such as centroid, moment of inertia, etc of sections of different shapes.					
Force System: Principles of statics. Forces and their effects. Types of force systems. Resultant of concurrent and parallel forces. Principle of moments. Varignon's theorem. Principle of equilibrium (no reaction problems). 8 Periods					
Analysis of trusses: Analysis of plane trusses. Introduction to Determinate and Indeterminate plane trusses. Analysis of simply supported and cantilevered trusses by method of joints. 9 Periods					
Sectional Properties: Properties of section – Centre of gravity, Moment of Inertia, Section modulus, Radius of gyration for various structural shapes. Theorem of perpendicular axis. Theorem of parallel axis. 10 Periods					
Elastic Properties and Constants: Elastic properties of solids. Concept of stress and strain. Deformation of axially loaded simple bars. Types of stresses. Concept of axial and volumetric stresses and strains. Elastic constants. Elastic Modulus. Shear Modulus. Bulk Modulus. Poisson's ratio. Relation between elastic constants (excluding composite bar and tapered Section). 10 Periods					
Complex Stresses: Principal stresses and strain. Numerical and Graphical method.Mohr's diagram. 8 Periods					
Total: 45 Periods					
Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.					
Assessment Methodology: Two Assessments with equal weightage. One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.					
Required Reading - R.K. Bansal, 'A Text book on Engineering Mechanics', Lakshmi Publications, Delhi,2008. - R.K. Bansal, 'A textbook on Strength of Materials', Lakshmi Publications, Delhi 2010. - Paul W. McMullin, 'Jonathan S. Price, 'Introduction to Structures', Routledge, 2016.					
References: Punmia, P. C. (2018). <i>Strength of materials and theory of structures: Vol. I</i>. Lakshmi Publications.					

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2. Ramamrutham, S. (2014). *Strength of materials*. Dhanpatrai and Sons.
3. Nash, W. A. (1989). *Strength of materials* (Schaum's series). McGraw Hill Book Company.
4. Rajput, R. K. (2017). *Strength of materials*. S.K. Kataria and Sons.

E-resources (Videos):

1. https://www.youtube.com/playlist?list=PLyqSpQzTE6M_MEUdn1izTMB2yZgP1NLfs
2. <https://www.youtube.com/watch?v=BlS5KnQOWkY>
3. <https://www.youtube.com/watch?v=A4KhJYrt4-s>
4. <https://www.youtube.com/watch?v=aQf6Q8t1FQE>
5. <https://www.youtube.com/watch?v=C-FEVzI8oe8>
6. https://www.youtube.com/watch?v=_DH3546mSCM

	Description of CO	PO6
CO1	Ability to apply the concepts of action of forces on a body and should be able to apply the equilibrium concepts.	3
CO2	Understanding the concept of bending moment and shear force of beam.	3
CO3	Understanding of the basic geometrical properties of sections.	3
CO4	Ability to understand dynamics of stress and strain	3

AR25203	Environmental Studies	L 3	T 0	P/S 0	C 3
Course Objectives: • To introduce the basic concepts of environment, ecosystems and biodiversity and emphasise on the biodiversity of India and its conservation. • To impart knowledge on the causes, effects and control or prevention measures of environmental pollution and natural disasters. • To facilitate the understanding of global and Indian scenario of renewable and non-renewable resources, causes of their degradation and measures to preserve them. • To familiarise about influence of societal use of resources on the environment and introduce the legal provisions, National and International laws and conventions for environmental protection. • To inculcate the effect of population dynamics on human and environmental health and inform about human right, value education and role of technology in monitoring human and environmental issues.					
Environment, Ecosystems and Biodiversity : Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – bio geographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds Field study of simple ecosystems – pond, river, hill slopes, etc. Introduction to the design of built environment with consideration of environment, ecosystems and biodiversity.					
Environmental Pollution: Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – soil waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural. Built environment and its relation to environmental pollution, both as a cause and as a response.					
Natural Resources: Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people –					

Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

The use of natural resources in architecture and the built environment through principles and case studies.

Social Issues and the Environment: From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment protection act – Air (Prevention and Control of Pollution) act – Water (Prevention and control of Pollution) act – Wildlife protection act – Forest conservation act – enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

Socially and environmentally sensitive design of built environment through case studies.

Human Population and the Environment : Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – Case studies.

Architectural design and density.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Required Reading

- Anubha Kaushik and C. P. Kaushik, 'Perspectives in Environmental Studies', 6th Edition, New Age International Publishers (2018).
- Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, (2016).
- Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education (2004).

References:

1. Trivedi, R. K. (n.d.). *Handbook of environmental laws, rules, guidelines, compliances and standards* (Vols. I & II). Enviro Media.

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2. Cunningham, W. P., Cooper, T. H., & Gorhani, S. D. (2001). *Environmental encyclopedia*. Jaico Publishing House.
3. Sengar, D. S. (2007). *Environmental law*. Prentice Hall of India Pvt. Ltd.
4. Rajagopalan, R. (2005). *Environmental studies: From crisis to cure*. Oxford University Press.
5. Bharucha, E. (2013). *Textbook of environmental studies for undergraduate courses*. Orient Blackswan Pvt. Ltd.

	Description of CO	PO8
CO1	To introduce the basic concepts of environment, ecosystems and biodiversity and emphasise on the biodiversity of India and its conservation.	3
CO2	To impart knowledge on the causes, effects and control or prevention measures of environmental pollution and natural disasters.	2
CO3	To facilitate the understanding of global and Indian scenario of renewable and non-renewable resources, causes of their degradation and measures to preserve them.	2
CO4	To familiarise about influence of societal use of resources on the environment and introduce the legal provisions, National and International laws and conventions for environmental protection.	3
CO5	To inculcate the effect of population dynamics on human and environmental health and inform about human right, value education and role of technology in monitoring human and environmental issues.	3

AR25204	Building Components and Measured Drawing	L	T	P/S	C
		1	0	3	4
Course Objectives: - To introduce the components of a typical building and their nomenclature. - To introduce the concept of scale and enable understanding of a building through measured drawing. - To give skills of representing physical characteristics of materials. - To give skills in isometric and perspective projections of the measured building.					
Introduction to Building Components and their Nomenclature: Building as act of construction for human use layered over the earth - foundation, structural systems, enclosures, weather protection. Understanding building components and their nomenclature using historic and contemporary examples from literature study, site visits, sketches. The nomenclature to include 1) basic types of construction such as load bearing/framed/space structure 2) basic components in a building such as foundation, plinth, walls, floors, roofs(flat, sloped, vaulted),roof covering, ceilings, staircases (principles and different geometric types), doors, windows and ventilators, lintel, sunshade, coping, cornice, stringcourse, parapet, waterproofing, finishing, mortar, decoration, paving3) basic materials for the components. 12 Periods					
Measured Drawing and Projections of Basic Components: Introduction to concept of scale and measured drawing through basic components such as handrails, furniture, arches, etc., Orthographic (plan, elevation, section) and isometric projection of the simple components. Representation of different materials through rendering, Perspective projection of simple components. 16 Periods					
Measured Drawing of Historical Building: Understanding a historic building in totality or in part through measuring drawing. 18 Periods					
Measured Drawing of Contemporary Building: Understanding a contemporary building in totality or in part through measuring drawing. 14 Periods					
Total: 60 Periods					
Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.					
Assessment Methodology: Three Assessments with equal weightage. One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage - 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,					
Required Reading - Francis D. K. Ching, ‘Architectural Graphics’ John Wiley and Sons, 2009. - Rendow Yee, ‘Architecture Drawing: A Visual Compendium of Types and Methods’, John Wiley and Sons, 2012. - Francis D. K. Ching, Steven P. Juroszek, ‘Design Drawing’, John Wiley and Sons, 2010.					

References:

1. John M. Holmes, 'Applied Perspective', 2nd edition, Sir Isaac, Pitman and Sons Ltd., London 1967.
2. Robert W. Gill, 'Basic Perspective', Thames and Hudson, London, 2006.
3. Leslie Martin C., 'Architectural Graphics', 2nd edition, The Macmillan Company, New York, 1970.
4. Natascha Meuser, 'Drawing for Architects: Construction and Design Manual', Dom Pub, 2015.
5. Emmitt, Stephen, *Barry's Introduction to Construction of Buildings*, 4th Edition, Wiley-Blackwell, United Kingdom, 2018.
6. Merritt, F.S. and Ricketts, J.T., *Building Design and Construction Handbook*, Sixth Edition, McGraw-Hill Professional, New York, 2000.
7. Swallow, P., Dallas, R., Jackson, S. and Watt, D., *Measurement and Recording of Historic Buildings*, 2nd Edition, Routledge, London and New York, 2013.
8. Edwards, B., *Understanding Architecture Through Drawing*, 2nd Edition, Routledge, London and New York, 2003.
9. Ching, F.D.K. and Juroszek, S.P., *Design Drawing*, 3rd Edition, Wiley, New Jersey, 2019.

E Resources/ E Books :

1. Architects' drawings – A selection of sketches by world famous architects through history by Kendra Schank Smith, 2005
2. Drawing with pen & ink – A word concerning the brush by Arthur.I.Guptill with an introduction by Franklin Booth, 1930
3. Building construction hand book tenth edition by Roy Chudley and Roger Greeno, 2014.

	Description of CO	PSO2	PSO6	PSO8
CO1	Understand and recognize the components of a building and nomenclature.	2	3	2
CO2	Ability to measure and draw components of a building.	2	3	2
CO3	Skilled to draft isometric and perspective projections of components of a building.	2	3	2
CO4	Understanding a building in total or in part through the process of measured drawing.	2	3	2

AR25205	Tools for Design Thinking	L	T	P/S	C
		0	0	4	4
Course Objectives: • To enable the ability to perceive the built environment through multiple modes of exploration such as observation, analysis, speculation , interpretation and representation. • To introduce fundamentals of human cantered design thinking, including basic user interface (UI) and user experience (UX) concepts in the physical world. • To foster design thinking using both digital and physical modes of representation. • To equip students with tools to interpret, transform, and communicate architectural ideas from observation to speculation					
This studio lays the foundation for design thinking by guiding students to understand how we perceive the world through sensory exploration and reflective observation. It begins by developing the ability to observe spatial, tactile, visual, and acoustic stimuli in both natural and built environments, and reflect critically on them. Students will investigate subjective and objective views, and differentiate between intuitive and analytical modes of understanding space. Through a sequence of structured modules, the studio transitions into diagrammatic and model-based analysis. Students will engage in exercises involving memory mapping, sketching, journaling, and intuitive representations. These help cultivate sensitivity to everyday spatial experiences and build awareness of how people perceive and navigate their environments. The second phase explores basic concepts of user interactions and experience focussing on how people interact with spatial elements in real world. Students will analyze simple spatial settings such as corridors, parks, and waiting areas to identify user needs and behaviours. Design as a continuous process in time as in streets and public spaces They will create interaction maps and touchpoint diagrams to understand human-scale interface within space, materials, and circulation patterns, laying the foundation for human-cantered design. The third phase delves into diagrammatic thinking, where students learn to abstract ideas, spatial relationships, and functions through graphic tools. They will experiment with bubble diagrams, functional zoning, conceptual sketches, and movement mapping. Case studies of buildings and spaces will be analysed using visual storytelling to reinforce critical thinking and clarity in communication. Illustrator, Photoshop, and hand-drafting methods will be integrated during this stage. In the following module, the studio explores the built environment through analytical diagrams, layering spatial parameters such as circulation, zoning, light, thermal comfort, and use-patterns to decode complex environments. Case studies and comparative methods will be employed, with outputs in both digital and analog formats. In the final phase, students will transition to model making as a means to test and express design ideas in three dimensions. They will explore physical materials and simple digital tools to investigate form, scale, and massing. Students will create conceptual, realistic, and generative models using foam, wire, clay, cardboard, and					

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resin, POP and different tactile materials as well as tools like Sketch Up, etc.

Students will then integrate insights from observation, user interaction, and diagrammatic analysis to develop a small conceptual project. The course will conclude with a reflective portfolio and oral presentation highlighting their design journey and thinking process.

Weightage: Continuous Internal Assessment: 60%, End Semester Examinations: 40%.

Assessment Methodology: Three Assessments with equal weightage.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage - 33.33%.

Required Reading

- Mark Garcia, 'The Diagrams of Architecture', Wiley 2010.
- Iain Fraser and Rod Henmi, 'Envisioning Architecture – An Analysis of Drawing, 1991', John Wiley and Sons, 1993.
- Alan F. Blackwell, 'Thinking with Diagrams', Springer, 2001.
- Nikolaus Gansterer, 'Drawing A Hypothesis: Figures of Thought', Springer, 2011.
- Neil Spiller, 'Visionary Architecture: Blueprints of the Modern Imagination', Thames and Hudson, 2008.
- Mo Zell, 'The Architectural Drawing Course', Thames and Hudson, 2017.
- Marc Treib, 'Drawing/Thinking Confronting an Electronic Age', Routledge, 2008.
- Mo Zell – The Architectural Design course, Understand the Principles and Master the Practices, Thames, and Hudson, 2008.

References:

1. Norman, D. (2013). The design of everyday things. Basic Books.
2. Cook, P. (2014). Drawing: The motive force of architecture. Wiley.
3. Lupton, E. (2017). Design is storytelling. Cooper Hewitt / Smithsonian Design Museum.
4. Pallasmaa, J. (2009). The thinking hand. Wiley.
5. Vidler, A. (2000). Diagrams of diagrams: Architectural abstraction and modern representation. Representations, (72), 1–20.
6. Shin, S.-J., Lemon, O., & Mumma, J. (2018). Diagrams. In E. N. Zalta (Ed.), The Stanford encyclopedia of philosophy (Winter 2018 Edition). <https://plato.stanford.edu/archives/win2018/entries/diagrams/>
7. Bua, M. (2012). Architectural inventions: Visionary drawing of buildings. Laurence King Publishing.
8. Farrelly, L. (2011). Representational techniques. AVA Publishing.
9. Eisenman, P. (1999). Diagram diaries. Thames & Hudson.
10. Unwin, S. (1997). Analysing architecture. Routledge.

E Resources/ e-books

1. Architectural Thought-The Design Process and the Expectant Eye-Micheal Brawne, 2003
2. Graphic Thinking for Architects and Designers- Paul Lesean, 2000

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3. Virtual reality and Built Environment-Jennifer Whyte, 2018
4. Precedents in Architecture-Analytical Diagrams , Formative Ideas and Partis-Roger H Clark and Micheal Pause, 2012
5. Operative Design-A Catalogue of spatial verbs-Anthony DiMari and Nora Yoo, 2013.
6. Folding Techniques-From Sheet to Form-Paul Jackson, 2011.

	Description of CO	PO1	PO2	PO3	PO5
CO1	An understanding of diagrams and models as tools for observing, recording, and reinterpreting spatial and conceptual realities.	2	3	3	2
CO2	An ability to understand important attributes of the built environment through diagrams/models	2	3	2	2
CO3	Ability to project thoughts and strategies through models, sketches, abstracts, and digital tools for conceptual ideation, communication and design thinking.	2	3	3	2
CO4	Achieved training and practice in knowing user experience and spatial attributes.	3	3	3	2

UC25H02	தமிழர்களும் தொழில்நுட்பமும்	L	T	P	C
		1	0	0	1
நெசவு மற்றும் பாணைத் தொழில்நுட்பம்: சங்க காலத்தில் நெசவுத் தொழில், பாணைத் தொழில்நுட்பம், கருப்பு சிவப்பு பாண்டங்கள், பாண்டங்களில் கீறல் குறியீடுகள்.					
வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்: சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும், சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள், மாமல்லபுரம் சிற்பங்களும், கோவில்களும், சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள், நாயக்கர் காலக் கோயில்கள், மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால், செட்டிநாட்டு வீடுகள், பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக் கலை.					
உற்பத்தித் தொழில் நுட்பம்: கப்பல் கட்டும் கலை, உலோகவியல், இரும்புத் தொழிற்சாலை, இரும்பை உருக்குதல், எஃகு, வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள், நாணயங்கள் அச்சடித்தல், மணி உருவாக்கும் தொழிற்சாலைகள், கல்மணிகள், கண்ணாடி மணிகள், சுடுமண் மணிகள், சங்கு மணிகள், எலும்புத்துண்டுகள், தொல்லியல் சான்றுகள், சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.					
வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்: அணை, ஏரி, குளங்கள், மதகு, சோழர்காலக் குழித் தூம்பின் முக்கியத்துவம், கால்நடை பராமரிப்பு, கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள், வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள், கடல்சார் அறிவு, மீன்வளம், முத்து மற்றும் முத்துக்குளித்தல், பெருங்கடல் குறித்த பண்டைய அறிவு, அறிவுசார் சமூகம்.					
அறிவியல் தமிழ் மற்றும் கணித்தமிழ்: அறிவியல் தமிழின் வளர்ச்சி, கணித்தமிழ் வளர்ச்சி, தமிழ் நூல்களை மின்பதிப்பு செய்தல், தமிழ் மென்பொருட்கள் உருவாக்கம், தமிழ் இணையக் கல்விக்கழகம் – தமிழ் மின் நூலகம், இணையத்தில் தமிழ் அகராதிகள், சொற்குவைத் திட்டம்.					
References: 1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்). 2. கணிணித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). 3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) 4. பொருளை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு) 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print) 6. Social Life of the Tamils – The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies). 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies). 8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.) 9. Keeladi – ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author) 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.					

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UC25H02	Tamils and Technology	L	T	P	C
		1	0	0	1
Weaving and Ceramic Technology: Weaving Industry during Sangam Age, Ceramic technology, Black and Red Ware Potteries (BRW), Graffiti on Potteries.					
Design and Construction Technology: Designing and Structural construction House & Designs in household materials during Sangam Age, Building materials and Hero stones of Sangam age, Details of Stage Constructions in Silappathikaram, Sculptures and Temples of Mamallapuram, Great Temples of Cholas and other worship places - Temples of Nayaka Period -Type study (Madurai Meenakshi Temple), Thirumalai Nayakar Mahal -Chetti Nadu Houses, Indo-Saracenic architecture at Madras during British Period.					
Manufacturing Technology : Art of Ship Building - Metallurgical studies, Iron industry, Iron smelting, steel -Copper and gold- Coins as source of history - Minting of Coins, Beads making- industries Stonebeads, Glass beads, Terracotta beads -Shell beads/ bone beats, Archeological evidences - Gem stone types described in Silappathikaram.					
Agriculture and Irrigation Technology: Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompuof Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing -Knowledge of Sea, Fisheries, Pearl, Conche diving - Ancient Knowledge of Ocean -Knowledge Specific Society.					
Scientific Tamil & Tamil Computing: Development of Scientific Tamil, Tamil computing, Digitalization of Tamil Books, Development of Tamil Software, Tamil Virtual Academy,Tamil Digital Library, Online Tamil Dictionaries, Sorkuvai Project.					
References: 1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்). 2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்). 3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு) 4. பொருறை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு) 5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print) 6. Social Life of the Tamils – The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies). 7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies). 8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.) 9. Keeladi – ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author) 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.					

AR25206	Basic Space Design Studio	L	T	P/S	C
		0	0	9	9
Course Objectives: • To enable the understanding of the qualitative and quantitative aspects of basic space design for human use. • To facilitate exploration of ways to address timeless aspects involved in the design of human built habitat in a micro scale. • To enable a sensitivity towards the cultural, particular and temporal aspects of architecture.					
Humans create and shape spaces/ forms for use. Use includes all aspects of human life- starting from containing the human as a unit (anthropometrics), the needs for carrying out of basic activities, spatial requirements for them, relationship between spaces, requirements of shelter, privacy, social and cultural factors, environmental response, psychological well being, light and air, meaning and symbolism, structure and economy, and so on. Architecture as a discipline brings all these needs together into a coherent totality through the act of conscious design. Conscious design involves the study/analysis of the existing and extrapolating towards the future through speculation. In the Basic Space Design Studio, the focus would be on simple architectural design projects that would enable the learning of the fundamentals of space with respect to all the above. The projects would be based on small, everyday situations involving simple circulation, materials and use. It could be a typology of private or public nature. Some suggestive projects are bedroom, bathroom, kitchen, shop, pavilion, creche, snack bar, residence, petrol bunk, fire station, bus stop. There would be a maximum of three projects. The techniques used for study and presentation can align themselves towards the above, such as cognitive maps, sketches, manual drawings, physical models with simple materials. Total: 135 Periods					
Weightage: Continuous Assessment: 60%, End Semester Examinations: 40%.					
Assessment Methodology: Three Assessments with equal weightage. Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage - 33.33%.					
Required Reading • Kent C. Bloomer, Charles W. Moore, 'Body, Memory and Architecture', Yale, 1977. • Gaston Bachelard, 'Poetics of Space', Beacon Press, 1994. • Juhani Pallasmaa, 'The Eyes of the Skin - Architecture and the Senses', John Wiley, 2012. • Joseph De Chiara, Michael J Crosbie, 'Time Saver Standards for Building Types', McGraw Hill Professional 2001. • Julius Panero, Martin Zelnik, 'Human Dimension and Interior Space', Whitney Library of Design, 1975.					

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- Joseph De Chiara, Julius Panero, Martin Zelnik, Time Saver Standards for Interior Design and Space Planning, McGraw Hill 2017.

References:

1. Hareguchi, H. (1988). A comparative analysis of 20th century houses. Academy Editions.
2. Miller, S. F. (1995). Design process: A primer for architectural and interior design. Van Nostrand Reinhold.
3. Neufert, E. (2012). Architects' data. Wiley.
4. Plowright, P. (2014). Revealing architectural design: Methods, frameworks and tools. Routledge.

E-Resources

1. <https://www.degruyterbrill.com/document/doi/10.1515/9783034608923/html> - Fundamental Concepts of Architecture by Alban Janson & Florian Tigger, 2014
2. <https://doi.org/10.4324/9780080490489> - Architecture Design Notebook by A Peter Fawrett, 2003
3. <https://www.bloomsbury.com/in/basics-design-08-design-thinking-9782940439386/> - Design Thinking, the Art or Practice of Using Your Mind to Consider Design by Gabin Ambrose and Paul Harris.

	Description of CO	PO1	PO2	PO3	PO4	PO5	PO6	PO8	PO12
CO1	Ability to design simple spaces for human use addressing spatial, social, cultural and temporal human needs.	3	2	2	2	3	2	2	1
CO2	Ability to synthesize learnings from the context	3	2	2	2	3	2	2	1
CO3	To execute design concepts with sensitivity to temporal aspects of Architecture	3	3	2	1	3	2	2	1

Semester III

AR25301	Architecture in India: Early Civilizations to Mughal Period	L	T	P/S	C
		3	0	0	3
Course Objectives: • To give an overall understanding of the architecture in India up to the Mughal period as parallel and sequential productions rising from the cumulative effect of forces operating and intersecting in the Indian subcontinent. • To inform about prominent modes of architecture in India in terms of evolution function, morphology and character. • To give exposure to works that are architecturally exemplary and/or representative.					
Early India and its Cultural Productions: Overview of early history of the Indian subcontinent bringing out different conjectures. Indus Valley Civilisation and its society, culture and urbanism. Vedic culture, settlements and architecture through textual and inscriptional sources as well as conjectures. Outline of textual sources related to architecture and town planning in ancient India. Political, religious and cultural history of India in the first millennium outlining various empires. Evolution of Hinduism, Buddhism and Jainism. Interrelationships among them and timelines. Architecture of early Mauryan empire. Buddhist architecture and art. Stupas, chaitya halls and viharas. Hindu temple form – principles, morphology, meaning, symbolism, iconography and rituals, classification. Early Hindu temple architecture and rock cut architecture of Guptas, Chalukyas and Pallavas. Influence of Buddhist architecture on them. Study of important monuments for all the above. 12 Periods					
Architecture of Southern India: Outline history of South India with particular emphasis on Bhakthi movement and evolution of temple town urbanism and architecture. Art and architecture under the Pallavas, Cholas, Pandyas, Nayaks and Vijayanagara kingdom with specific focus on Hindu temple architecture. Influence of social and political history on them. Hoysala architecture. Study of important monuments for all the above. 8 Periods					
Architecture of Northern India: Architecture of Gujarat, Orissa, Madhya Pradesh and Rajasthan with specific focus on Hindu temple architecture. Study of important monuments. Architecture of step wells in Northern India and their socio-cultural importance. 8 Periods					
Introduction to Islamic Architecture and Early Islamic Architecture in India: Brief history of Islam. Islamic architecture of the world as rising from Islam as a socio-cultural and political phenomenon. Evolution of building types in terms of forms and functions. Principles and characteristics of Islamic architecture - to include aspects of religion, geometry, structure, materials, decoration, light. Early political history of Islam in India. Evolution of Islamic architecture under the Delhi Sultanate - Slave, Khaji, Tughlaq, Sayyid and Lodi dynasties. Study of important monuments. Early Islamic architecture of Punjab. 8 Periods					

Regional Islamic Architecture, Mughal Architecture: Spread of Islam into other regions of India and their architectural expressions - Gujarat, Bengal, Malwa and the Deccan. Study of important monuments.

Political History of the Mughals. Mughal architecture and urbanism under Humayun, Akbar, Shahjahan and Aurangzeb. Study of important monuments. Outline of architecture related to Islam in Tamil Nadu.

9 Periods

Total: 45 Periods

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Required Reading

1. Percy Brown, 'Indian Architecture (Buddhist and Hindu Period)', Taraporevala and Sons, Bombay, 2014.
2. Percy Brown, 'Indian Architecture (Islamic Period)', Taraporevala and Sons, Bombay, 2014.
3. Burton Stein, A History of India, John Wiley and Sons, 2010.

References:

1. Christopher Tadgell, 'The History of Architecture in India - From the Dawn of Civilization to the End of the Raj', Phaidon, 2002.
2. Robert Hillenbrand, 'Islamic Architecture - Form, Function and Meaning', Columbia University Press, 2004
3. Romila Thapar, 'The Penguin History of Early India', Penguin, 2015.
4. K.A. Nilakanta Sastri, 'A History of South India: From the Prehistoric Times to the Fall of Vijayanagar', Oxford University Press, 2007.
5. George Michell, 'The Hindu Temple', University of Chicago Press, 1988.
6. Stella Kramrisch, 'The Hindu Temple', Motilal Banarsidass, Vol I 2002, Vol II 1996.
7. Satish Grover, 'Buddhist and Hindu Architecture in India', CBS, 2008.
8. Satish Grover, 'Islamic Architecture in India', CBS, 2012.
9. Catherine Asher, 'Architecture of Mughal India', Cambridge University Press, 2001.
10. Ananda K. Coomaraswamy, 'The Dance of Siva: Essays on Indian Art and Culture', Rupa Publications, 2013.
11. A.L. Basham, 'The Wonder that was India', Picador India, 2014.

E Resources

1. **Indian Architecture (Buddhist and Hindu) -**
https://ignca.gov.in/Asi_data/18060.pdf
2. **Temples of North India by Krishna Deva**
<https://ia902900.us.archive.org/29/items/in.ernet.dli.2015.107499/2015.107499.Temples-Of-North-India.pdf>
3. **Temples of South India by K.R.Srinivasan -** <https://telibrary.com/wp-content/uploads/2022/12/Temples-of-South-India-1971.pdf>

4. **Civilizations of the Indus valley and beyond by Wheeler, Sir Mortimer -**
<https://archive.org/details/in.gov.ignca.44291/page/n13/mode/2up>
5. **Mohenjo Daro and the Indus Civilization Vol-i (1931) by Marshall Sir John -**
<https://archive.org/details/in.ernet.dli.2015.722/page/n25/mode/2up>
6. **Indo - Islamic architecture -** <https://www.drishtias.com/to-the-points/paper1/indo-islamic-architecture>
7. **History Of Indo-Islamic Architecture – Analysis by Dr. Mohamed Chtatou**
<https://www.eurasiareview.com/22112023-history-of-indo-islamic-architecture-analysis/>
8. **Indo-Islamic Architecture) Before And After Mughals Asif Anwar -**
https://www.academia.edu/39725325/INDO_ISLAMIC_ARCHITECTURE_BEFORE_AND_AFTER_MUGHALS

	Description of CO	PO4	PO5	PO3
CO1	An understanding of the diversity of architecture in India and sensitivity towards its syncretic aspects.	3	2	2
CO2	Ability to appreciate particular cultural, symbolic, spatial and material qualities in architecture and cities as givers of meaning and continuity.	2	2	3
CO3	Ability to appreciate universal qualities of architecture and their effects.	3	3	3

AR25302	Structural Systems and their Analysis	L	T	P/S	C
		3	0	0	3
Course Objectives: • To introduce mechanics and principles of loads distribution in soil. • To introduce the principles of loads and distribution in structural system of a building. • To enable understanding on the basic concepts of shear force and bending moment acting on beams under various support system through exercises • To give knowledge about load bearing capacity of Column and its limitations					
Soil Mechanics: Introduction to Soil Mechanics. Concept of Safe bearing capacity. Types of soil. Distribution of upward pressure in different types of soil (No mathematical Calculation). 6 periods					
Loads and Load Distribution: Types of Loads - Gravity, Wind, Dead, Live Load. Introduction to structural systems, Load flow and distribution. Concept of load distribution for structural systems and overall stability like a) One way slab b) Two-way slab c) Arches e) portal frames f) Space Structures. Determinate and Indeterminate structure (no numerical problems /calculation). 8 periods					
Shear force and Bending moment of Beams: Beams and supporting conditions. Types of supports. Shear force and bending moment for simply supported, cantilever and over hanging beams (point load and uniformly distributed load). 10 periods					
Bending and Deflection in Beams: Theory of simple bending. Stress distribution at a cross section due to bending moment and shear for Rectangular, I and T sections. Concept of Flitched and Castellated beams (no numerical problems / calculation). Basic factors causing deflection in Beams, relation between slope, deflection and curvature. Determination of deflection and slope for simply supported and Cantilever beams using Double Integration Method and Macaulay's method (point load and uniformly distributed load). 12 periods					
Columns: Short and long columns. Concept of elastic stability. Euler's theory. Assumptions and load carrying capacity of columns with different end conditions. Concept of effective length. Slenderness ratio. Limitations of Euler's theory. Rankine's formula. 9 periods Total: 45 Periods					
Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.					
Assessment Methodology: Two Assessments with equal weightage. One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.					

Required Reading

1. R.K. Bansal, 'A Text Book on Strength of Materials', 6th Edition, Laxmi Publications, New Delhi, 2018.
2. B.C. Punmia et al, 'SMTS-I, Strength of Materials', 10th Edition, Laxmi Publications, 2018.

References:

1. Paul W. McMullin, Jonathan S. Price, 'Introduction to Structures, Routledge, 2016.
2. M.M. Ratwani and V.N. Vazirani, 'Analysis of Structures, Vol. 1 ', Khanna Publishers, Delhi, 2015
3. M.M. Ratwani and V.N. Vazirani, 'Analysis of Structures, Vol. 2 ', Khanna Publishers, Delhi, 2015.
4. Timoshenko, S.P. and D.H. Young, 'Elements of Strength of Materials', 5th edition, East West Press, 2011.
5. A.R. Jain and B.K. Jain, 'Theory and Analysis of Structures', Vol. 1, Nemchand and Bros, Roorkee, 1987.
6. R.K. Rajput, 'Strength of Materials', S.Chand, 2015.

E Resources (videos)

- <https://www.youtube.com/watch?v=GkFgysZC4Vc>
- https://www.scribd.com/document/490148210/SOM-Lecture-Notes-8?utm_source=chatgpt.com
- https://learnmech.com/strength-of-material-som-notes-free-pdf/?utm_source=chatgpt.com
- <https://www.youtube.com/watch?v=21G7LA2DcGQ&t=720s>
- https://www.youtube.com/watch?v=ZSQ_5lRj5gl

	Description of CO	P02	PO6
CO1	Understanding of concept of loads.	2	3
CO2	Ability to apply the concepts of determining the techniques of finding the stresses.	3	3
CO3	Ability to use the theory of simple bending to find the deflection in beams.	3	2
CO4	Ability to analyse and solve the different types of columns and analyse the different types of indeterminate beams	3	3

AR25303	Climate and Built Environment	L 3	T 0	P/S 0	C 3
Course Objectives: • To introduce climate and concept of human comfort. • To inform about the effects of atmosphere sky and sun on the earth and building. • To inform about the effects of wind and air with respect to siting and design of buildings. • To inform about principles of day lighting in architecture. • To understand architecture as a response to environment in totality, including climate, sun, sky, wind, lighting, vegetation, microclimate.					
Climate, Classification and Human Comfort: Climate and Civilisation. Components and characteristics of climate. Classification of climate for building designers in tropics. Human body heat balance and heat loss. Effects of climatic factors on human body heat loss. Effective temperature, human thermal comfort. Use of C. Mahoney's tables. Introduction to Urban Heat Island (UHI).					
Building Response to Sun and Atmosphere: Movement of sun. Locating the position of sun. Sun path diagram. Azimuth and altitude angles. Overheated period. Solar shading. Shadow angles. Exercise in the design of shading devices through models/ calculations/ drawings/ software. Concepts and principles of daylight in buildings- transmission, reflection, glare, daylight factor, room proportion, opening size and distribution.					9 periods
Heat Flow Through Building Envelope- Concepts: The transfer of heat through solids. Definitions- Conductivity, Resistivity, Specific heat, Conductance, Resistance and Thermal capacity. Surface resistance and air cavities. Air to air transmittance (U value). Time lag and decrement. Material qualities of envelopes. Exercise involving heat flow through building envelope involving calculations. Demonstration of software for design analysis.					
Air Movement and Buildings: The wind. The effects of topography on wind patterns. Air currents around building. Air movement through buildings. The use of fans. Thermally induced air currents – Stack effect, Venturi effect, scoop, court yards. Exercise exploring air movement in architecture with physical models. Demonstration of simulation through software.					7 periods
Environment and Design of Buildings: Design strategies in warm and humid climates, hot and humid climates, hot and dry climates and Tropical Island climate and cold climates. Understanding through case studies and site visits. A brief introduction to ENS 2024 (Energy Conservation and Sustainable Building Code for Residential Buildings)					7 periods Total: 45 Periods

Padeepz App - For Anna University

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Required Reading

1. O.H. Koenigsberger and Others, 'Manual of Tropical Housing and Building-Climatic Design', Orient Longman, Madras, India, 2010.
2. Galloe Salam and Sayigh A.M.M, 'Architecture, Comfort and Energy', Elsevier Science Ltd, Oxford, 1998.
3. Arvind Krishnan, Szokolay et.al, 'Climate Responsive Architecture- A Design Handbook for Energy Efficient Buildings', Tata McGraw Hill, 2017.
4. Eco Niwas Samhita (ENS) – Energy Conservation and Sustainable Building Code for Residential buildings. 2024, B.E.E Govt. of India.

References:

1. O.H. Koenigsberger and Others, 'Manual of Tropical Housing and Building-Climatic Design', Orient Longman, Madras, India, 2010.
2. Bureau of Indian Standards IS 3792, 'Hand book on Functional Requirements of Buildings other than Industrial Buildings- Part I – IV', New Delhi, 1987.
3. Benjamin H. Evans, 'Day lighting in Architecture', Mcgraw Hill, 1981.
4. Martin Evans, 'Housing Climate and Comfort', Architectural Press, London, 1980.
5. B. Givoni, Man, 'Climate and Architecture', Architectural Sciences Series, Applied Science Publishers Ltd., London, 1981.
6. B. Givoni, 'Passive and Low Energy Cooling of building', Van Nostrand Reinhold, NewYork, 1994.

E Resources

1. Daylight, Visual Comfort and Quality of Light.pdf
<https://www.konstfack.se/PageFiles/20012/DAYLIGHT,%20visual%20comfort%20and%20quality%20of%20light.pdf>
2. Sun Wind and Light architectural design strategies.pdf
<https://dokumen.pub/sun-wind-amp-light-eletctonic-volume-third-edition-3nbsped-9780470945780-9781118332887.html>
3. Architecture -Comfort and Energy.pdf
<https://archive.org/details/Architecture Comfort and Energy/page/n185/mode/2up>

	Description of CO	PO6	PO8
CO1	An understanding of climate, comfort and heat balance in human beings.	2	3
CO2	An understanding of material effects in buildings.	2	3
CO3	Ability to conceptually design buildings considering the effect of sun and wind on buildings.	2	3
CO4	Ability to interpret design strategies of different climatic zones.	3	3
CO5	Ability to analyze dynamics of climate parameters.	1	3

AR25304	Non-Structural Building Elements and Finishes	L	T	P/S	C
		1	0	3	4
Course Objectives: • To introduce the different types of doors, windows, ventilators, etc., in a building and to enable an understanding of their making, fixing and operating mechanisms in different materials- timber, steel, aluminium, PVC/UPVC. • To give familiarity about building interior components. • To give knowledge about types and its related systems in building finishes.					
Introduction to Doors, Windows and Ventilators; Timber Doors, Windows and Ventilators: Introduction to doors, windows and ventilators. Their types according to material (timber, industrial timber, steel, aluminium, concrete), swing (single, double, degree of swing), mechanisms of operation (fixed, openable, sliding, folding, sliding and folding, pivoted, revolving, top hung, bottom hung, louvred), design (french, corner, bay). Understanding through sketches/product literature/ case studies. Outline of timber as a material for doors, windows and ventilators (including industrial timber such as plywood, blockboard, particle board, etc.,). Basic components for timber door/ window/ ventilator of different types- outer frame, shutter frame, shutter material, hardware, fixtures, etc., Their joining and fixing procedures, insect screens. Finishing materials and procedures. Drawings/models of the principles. Understanding of detailed drawings/ published work. Site visits with documentation in the form of sketches/ drawings/ photos. 20 Periods					
Steel, Aluminium and PVC/ UPVC Doors, Windows and Ventilators: Outline of steel, aluminium, PVC/UPVC material for doors, windows and ventilators. Comparing their characteristics and context of use. Basic components for door/ window/ ventilator of different types- typical sections for outer and shutter frame, shutter material, hardware and fixtures, etc., Their joining and fixing procedures, insect screens. Finishing materials and procedures. Sketches/models of the principles. Understanding of product literature/shop drawings. Site visits with documentation in the form of sketches/ photos. Outline specialisation of products such as steel rolling shutters. 16 Periods					
Interior Elements: Introduction to building interior elements such as partitions, flooring, false ceiling, panelling, handrails, etc., and their different types. Materials for them- timber, industrial timber, gypsum, steel, aluminium, PVC/UPVC, glass, etc., Different kinds of systems and methods. Drawings/ sketches of the principles. Understanding of product literature. Site visits with documentation in the form of sketches/ photos. 10 Periods					
Building Finishes: Introduction to building finishes. Different types of paints, their composition, characteristics and uses. Types to include enamels, distemper, plastic emulsion, polyurethane, special paints such as fire retardant, luminous and bituminous paints. Preparation of surface and application for different paints/ finishes. Gypsum and POP finishes. Adhesives and sealants. Basic waterproofing of buildings. Understanding of product literature. Understanding construction techniques through site visits/ case studies.					

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Outline of applied finishes and their techniques like tiling, cladding, stone and stone based, wood and wood based, terracotta, cement based, stucco, vinyl, carpets, plastic.

14 Periods

Total: 60 Periods

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage.

One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage – 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

Required Reading

1. Francis D.K Ching, 'Building Construction Illustrated', John Willey and Sons, 2014.
2. Willis H Wagner and Howard Bud Smith, 'Modern Carpentry', Good Heart-Wilcox Publishers, Portland, 2007.
3. Barry, 'Construction of Buildings, Volume 1 and 2', Blackwell Publishing Ltd., Oxford, 2005.
4. S.P Arora and S.P Bindra, 'A Text Book of Building Construction', Dhanpat Rai Publishing Company Pvt. Ltd, 2010.

References:

1. Don A. Watson, 'Construction Materials and Processes', McGraw Hill, 1972.
2. W.B. McKay, 'Building Construction', Person India, Vol, 1 2013, Vol II, 2013.
3. B.C.Punmia et al, 'Building Construction', Laxmi Publications, 2016.
4. S.K.Sharma, 'A Text book of Building Construction', S. Chand and Co Ltd., New Delhi, 1998.
5. S.K. Duggal, 'Building Materials', New Age International Publishers, 2016.
6. R.J. S. Spence and D.J. Cook, 'Building Materials in Developing Countries', John Wiley and sons 1983.
7. S. C. Rangwala, 'Engineering Materials', Charotar Publishing House India, 2015.
8. Roy Chudley, Roger Greeno, 'Building Construction Handbook', Routledge, 2017.
9. American Institute of Timber Construction (AITC), 'Timber Construction Manual', Wiley Publishers, 2004.

E Resources:

1. Building Construction Illustrated, Francis D. K., *Building Construction Illustrated*, John Wiley & Sons, Latest Edition. (Available as eBook)
2. Fundamentals of Building Construction: Materials and Methods, Edward Allen and Joseph Iano, *Fundamentals of Building Construction: Materials and Methods*, John Wiley & Sons, Latest Edition. (Available as eBook)

	Description of CO	PO2	PO6
CO1	Ability to design and detail appropriate doors, windows, ventilators, etc., for a building using wood, metal and plastic based materials.	2	3
CO2	Familiarity with building interior elements and systems.	2	3
CO3	Knowledge about building finishes and related techniques	1	3

AR25305	Digital Drawing, Visualisation and Representation	L	T	P/S	C
		1	0	3	4
Course Objectives: • To introduce computer operation principles and explore image editing through a graphical composition. • To impart training in computer aided 2D drafting and 3D modelling skills and to apply in developing a design from the initial stages to the final outcome. • To enable the rendering of a building so as to create a photo realistic image					
Introduction to Computer and Image Editing Technology of small computer system. Computer terminology. Operation principles of P.C. Introduction to application software, graphic system, use of printers, scanner, plotter, file management, etc. Understanding bitmap images and vector graphics, image size and resolution. Basic tools for editing and creating graphics. Exercise in creating visual compositions using digital graphics (pixels/vector). 12 Periods					
Basics of Building Modelling and Viewing the Building Model Creating a basic floor plan. Temporary dimensions. Adding and modifying walls. Working with compound walls. Using editing tools. Adding and modifying doors. Adding and modifying windows. Understanding the drawing unit's settings, scales, limits, drawing tools, drawing objects, object editing, and text, dimensioning. Transparent overlays, hatching utilities, line type, line weight and colour. Multiline, polyline, etc. Styles, blocks and symbol library. 2D Drafting exercise of a simple building. 20 Periods					
Introduction to 3D Modelling Slide facilities script attributes, V-port, editing session. Introduction to 3D-modelling technique and construction planes, drawing objects, 3D surfaces setting up elevation thickness and use of dynamic projections. Solid modelling with primitive command and Boolean operation. 3D sculpture exercise using 3D primitives (cubes, spheres etc.) 20 Periods					
3D Rendering and Setting Rendering and scene setting to create a photo realistic picture, understanding material mapping, environment setting and image filling. Exercise on interior 3D rendering of a room exploring the potential of lights and camera. 8 Periods Total: 60 Periods					
Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.					
Assessment Methodology: Three Assessments with equal weightage. One Assessment as Internal written Test /Examination (33.33%), other two assessment					

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(each assessment weightage – 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

Required Reading

1. Ryan Duell and Tobias Hathorn, 'Auto Desk Revit Architecture 2016: Essentials', Auto Desk Official Press, Sybex, 2015.
2. Eric Wing, 'Auto Desk Revit Architecture 2017: No Experience Required', Auto Desk Official Press, Sybex, 2016.
3. Alexander C. Schreyer, 'Architectural Design with SketchUp', Wiley, 2012.

References:

1. Deke McClelland, 'Photoshop CS Ver(8) Bible ', John Wiley and Son, New York, 2004.
2. Aouad, 'Computer Aided Design guide for Architecture, Engineering and construction', Spon Process, 2012.
3. Mohammed Saleh Uddin, 'Digital Architecture – 3D Computer Graphics from 50 Top Designers', 1999.
4. Douglas R. Seidler, 'Digital Drawing for Designers', Bloomsbury, 2014.
5. Scott Onstott, 'AutoCAD 2015 and AutoCAD LT 2015 Essentials', Auto Desk Official press, 2014.
6. Fiorello. J. A., 'CAD for Interiors Beyond the Basics', Wiley Publications, 2011.

E Resources/ E Books:

1. Modelling with AutoCAD 2000, Bob McFarlane, London 2012
2. CAD Principles for Architectural Design, Peter Szalapaj, London 2013
3. Mastering Autodesk® Revit® for Architecture, Marcus Kim, Eddy Krygiel, Lance Kirby, John Wiley and Sons, Inc, 2017
4. Revit® Architecture 2024 for Designers, Munir Hamad, De Gruyter, 2023.
5. SketchUp for Site Design: A Guide to Modeling Site Plans, Terrain, and Architecture, Daniel Tal, John Wiley and Sons, Inc, 2012

	Description of CO	PO1	PO2	PO3
CO1	Ability to express using digital tools in the realm of visual composition, drafting, 2D drafting and 3D rendering.	2	3	2
CO2	Ability to understand and handle principles and modes of computer application.	2	2	2
CO3	Ability to apply rendering techniques with all its dynamics.	2	3	2

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AR25306	Advanced Space Design Studio	L	T	P/S	C
		0	0	9	9
Course Objectives: ● To enable an understanding of the fundamental possibilities of architectural form and space in relation to human experience and use within the context of the immediate living environment. ● To get the above understanding through personal, first hand exploration as well as through theoretical and literature studies. ● To use this understanding to create meaningful built environment in the context of small scale projects that involve simple function and experience.					
Designing a built environment requires the development of individual capacity for thought with respect to subjective and objective aspects. Studying and designing projects of small scale that involve a more immediate and basic experience is important in this context. The study and project exploration will involve the following aspects from first principles as well as through live studies and theory – human behaviour, activities and needs for various purposes, role of specific form/space in creating particular experiences and effects, built form-open space relationships, spatial organisation, environment behaviour aspects (especially those relating to children), lighting and ventilation, site as a positive tool in all scales, potential of materials and construction. Through this, both the qualitative and quantitative attributes of design can be understood and engaged. This would give training in the ingenious use of architecture to fulfil goals towards a responsive and stimulating environment. The techniques used for study and presentation can align themselves towards the above, such as cognitive maps, sketches, manual drawings, physical models with simple materials. The scale and complexity of projects will be commensurate with this - small to medium size projects involving buildings/ small campuses with simple circulation, passive energy, multiples of single unit space, single use buildings. Some suggestive projects are small buildings or small campuses involving civic/ cultural use, uses related to children such as schools, facilities for people with special requirements. The number of projects is left to the discretion of the faculty based on scale and complexity.					
135 Periods					
Weightage: Continuous Assessment: 60%, End Semester Examinations: 40%.					
Assessment Methodology: Three Assessments with equal weightage.					
Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage – 33.33%.					
Required Reading					
1. Julius Panero, Martin Zelnik, ‘Human Dimension and Interior Space’, Whitney Library of Design, 1975. 2. Richard P. Dober, ‘Campus Planning’, Society for College and University Planning, 1996					

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3. Sam F. Miller, 'Design Process: A Primer for Architectural and Interior Design', Van Nostrand Reinhold, 1995.
4. Dudek M, 'Schools and Kindergartens', Birkhauser 2007.

References:

1. Joseph De Chiara, Michael J Crosbie, 'Time Saver Standards for Building Types', McGraw Hill Professional, 2001.
2. Kevin Lynch, 'Site Planning', MIT Press, Cambridge, 1967.
3. Steen Eiler Rasmussen, 'Experiencing Architecture', MIT Press, 1962.
4. Kent C. Bloomer and Charles W. Moore, 'Body, Memory, and Architecture', Yale University Press, 1977.
5. Juhani Pallasmaa, 'The Eyes of the Skin – Architecture and the Senses', John Wiley: New York, 2005.

E-Resources

1. School Design Matters, Harry Daniels, Andrew Stables, Hau Ming Tse, Sarah Cox, Routledge, 2019
2. Schools and Kindergartens, A Design Manual, Mark Dudek, Birkhäuser Basel, 2008
3. Small Spaces: Recasting the Architecture of Empire, Swati Chattopadhyay, Bloomsbury Visual Arts, 2023
4. Circular Design for Zero Emission Architecture and Building Practice, Marwa Dabaieh, Elsevier Inc. 2023
5. Smart Architecture – A Sustainable Approach for Transparent Building Components Design, Valentina Frighi, Springer Cham, 2022.

	Description of CO	PO1	PO2	PO3	PO4	PO5	PO7	PO12
CO1	Ability to perceive, understand and represent fundamental attributes of form-space with respect to human experience and use.	3	3	2	3	3	2	3
CO2	Ability to ideate, innovate and create meaningful built environment in basic human situations.	3	3	2	3	3	2	3
CO3	Ability to analyze theory with relevant to the context.	2	2	3	2	2	3	3

Semester IV

AR25401	Regional and Vernacular Built Environments in India	L	T	P/S	C
		3	0	0	3
Course Objectives: • To introduce the nature of evolution/ determinants of human settlements. • To give an understanding of regional manifestations in settlements and architecture as evolving from contextual forces. • To study the important manifestations of regional/ vernacular architecture and settlements in different regions of India. • To learn by case studies the design sensitive interventions that balance historic preservation with modern utility.					
Human Settlements, Determinants and study of Vernacular Architecture: Determinants of morphology of human settlements – climate response, socio-cultural and economic aspects, geography, etc, Differentiating between rural and urban settlements. Overview of settlement evolution in India. Relation between settlement morphology and architecture. Discussion of the terms traditional architecture, regional architecture, indigenous architecture, vernacular architecture, etc., Vernacular/ regional architecture as a process and responsive design. Concepts, approaches, survey and study of vernacular/ regional architecture –aesthetic, architectural, anthropological, etc., General aspects to be studied in vernacular/ regional architecture of India –climatic response, forms, spatial planning, socio-cultural aspects, symbolism, colour, art, materials of construction and construction technique, etc., 10 periods					
Settlement Morphology and Regional Architecture of Gujarat and Rajasthan: Determinants and morphology of rural and urban settlements in Gujarat. Vernacular/ regional architecture of Gujarat as particular productions. Determinants and morphology of rural and urban settlements in Rajasthan. Vernacular/ regional architecture of Rajasthan as particular productions. 8 periods					
Settlement Morphology and Regional Architecture of Kashmir and Bengal: Determinants and morphology of settlements in Kashmir. Vernacular/ regional architecture of Kashmir as particular productions. Determinants and morphology of settlements in Bengal. Vernacular/ regional architecture of Bengal as particular productions. Colonial and modern influences. 8 periods					
Settlement Morphology and Regional Architecture of Tamilnadu and Kerala: Determinants and morphology of settlements in Kerala. Vernacular/ regional architecture of Kashmir as particular productions. Determinants and morphology of rural and urban settlements in Tamil Nadu. Vernacular/ regional architecture of Tamil Nadu as particular productions. Colonial and modern influences. 10 periods					

Contemporary adaptation of Regional and Vernacular architecture:– Case Studies

Adaptive Reuse of various vernacular buildings to regional contexts – Design sensitive interventions that balance historic preservation with modern utility-the case specific contextual adaptation / the philosophy and ethics, economics of recycling buildings with sustainable regenerative system:-

Vernacular building of region-specific case studies – namely Chettinad houses and palaces, Tamil Nadu ,Wadas / Havelis of Gujarat, Rajasthan , Tharavadu/ colonial structures of kerala and boat houses and mansions, Kashmir and others .

Organisations and architects promoting craft and techniques of vernacular architecture today --Hunnarshala Foundation - Thannal Hand Sculpted Homes -,Tamil Nadu, India, Centre for Vernacular Architecture Trust (CVAT) – India, Dharmalaya Institute - Himachal Pradesh, Benny Kuriakose & Associates - Chennai, Didi Contractor- Auroville Earth Institute, Pondicherry

Modern buildings adapting key aspects of vernacular architecture including spatial planning, craft, materials, etc—case studies Good Earth Malhar, Bangalore - ,Daya's Madh Island House – and Rustam Mehta residence Lonavla - Nari Gandhi,Development alternatives HQ- Delhi - Development Alternatives , Atelier School, Bangalore - Biome Environmental Solutions Contractor Krushi Bhawan,

9 periods

Total: 45 Periods

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Required Reading

1. S. Muthiah et al, 'The Chettiar Heritage', Chettiar Heritage, 2017.
2. Weber. W and Yannas. S, 'Lessons from Vernacular Architecture', Routledge, 2014

References:

1. Bernard Rudofsky, 'Architecture without Architects', University of New Mexico Press, 1987.
2. Paul Oliver, 'Encyclopedia of Vernacular Architecture of the World', Routledge, 2007.
3. Amos Rapoport, 'House, Form and Culture', Prentice Hall Inc. 1969.
4. Carmen Kagal, 'Vistara- The Architecture of India', The Festival of India, 1986.
5. Kosambi D.D, 'The Culture and Civilisation of Ancient India in Historical Outline', Vikas,1997.
6. R W Brunskill, 'Illustrated Handbook on Vernacular Architecture', Faber and Faber, 2000.

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7. V.S. Pramar, 'Haveli – Wooden Houses and Mansions of Gujarat', Mapin, 1989.
8. Kulbushanshan Jain and Minakshi Jain, 'Mud Architecture of the Indian Desert', Aadi Centre, Ahmadabad, 1992.
9. G.H.R. Tillotson, 'The Tradition of Indian Architecture: Continuity, Controversy, Change since 1850', Oxford University Press, Delhi, 1989.

E Resources

1. "Towards the Prospect of Modern Vernacular-John Reynolds-MIAMI University"- ACSA 109 Annual Meeting-Expanding the View
<https://www.acsa-arch.org/proceedings/Annual%20Meeting%20Proceedings/ACSA.AM.109/ACSA.AM.109.40.pdf>
2. Vernacular Architecture: A Comprehensive Exploration of its Meaning and Relevance In Modern India-Morphogenesis
<https://www.morphogenesis.org/media/vernacular-architecture-and-its-importance-in-modern-india/>

	Description of CO	PO4	PO8	PO12
CO1	An understanding of the built environment as a process and knowledge of its determinants.	3	2	3
CO2	Ability to analyse built environment through the knowledge of approaches to its study.	2	2	3
CO3	Knowledge of settlement morphologies and regional/ vernacular architecture in specific regions of India.	3	3	3
CO4	Ability to analyse contemporary interpretations and applications of vernacular architecture.	3	3	3

AR25402	Structural Design of Masonry and Timber	L	T	P/S	C
		3	0	0	3
Course Objectives: • To get introduced to basic design of masonry wall and earthquake resistant masonry design. • To enable the learning of design of reinforced masonry walls and knowledge about the masonry retaining walls. • To give knowledge to design of timber components (beams, columns and trusses) in the buildings.					
Basic Masonry Design: Basic bearing capacity of stone, brick masonry and concrete block masonry. Masonry Elements. Safe bearing capacity of soil. Concept of elastic method, ultimate load method and limit state method. Mortar for Masonry Structures. Brickwork. IS 2212 : 1991, SP 10 : 1975, SP 20 : 1991, IS 1905 : 1987 and other code requirements. Analysis and design of brick: masonry wall with and without openings. Use of nomograms. 9 periods					
Reinforced Masonry Design: Introduction to reinforced masonry design. IS 4326: 1993, IS 13828 : 1993 and other code requirements: Earthquake resistant design of a masonry building. Simple problems. 9 periods					
Retaining Walls: Terminologies and different types/classification of retaining walls - Principles of Thrust and types of Structural forces acting on retaining walls . Design concept of masonry retaining wall. 9 periods					
Design of Timber Beams and Columns: Grading of timber. IS 883 : 2016, SP 33 : 1987 and other code requirements. Permissible stresses. Design of solid timber beams. Madras terrace roof design. Design of solid timber columns. Built-up Column. Spaced Column. 9 periods					
Design of Timber Trusses: Introduction to plane trusses. Introduction to determinate and indeterminate plane trusses. Types. Concept of analysis and design of timber trusses (No numerical problems) 9 periods Total: 45 Periods					
Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.					
Assessment Methodology: Two Assessments with equal weightage. One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.					
Required Readings: 1. P. Dayaratnam, P. Sarah, 'Brick and Reinforced Brick Structures', Medtech, 2018					

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2. J. Ambrose, Simplified Design of Wood Structures, John Wiley & Sons, 2009

References:

1. A.W.Hendry, B.P.Sinha, S.R. Davies, Design of Masonry Structures, E&FN Spon, 1997.
2. National Building Code of India, Part VI, Structural Design, 2016.
3. IS 2212 : 1991, SP 10 : 1975, SP 20 : 1991, IS 1905 : 1987 IS 4326 : 1993, IS 13828 : 1993 Handbook on Masonry design and construction
4. IS 883 : 2016, SP 33 : 1987 Code of Practice for Design of Structural Timber in Buildings.
5. IS 1905 : 1987, Code of Practice for Structural use of Unreinforced Masonry.
6. C.Arya, 'Design of Structural Elements : Concrete, steelwork, masonry and timber designs to British Standards and Eurocodes', Spon Press, 2009.

E –resources

- https://www.tnrd.tn.gov.in/buildings_design/Buildings.pdf
- <https://www.iitk.ac.in/nicee/IITK-GSDMA/EQ12a.pdf>
- <https://www.iitk.ac.in/nicee/IITK-GSDMA/EQ12b.pdf>
- https://www.researchgate.net/publication/382538887_A_Textbook_of_Design_of_Steel_and_Timber_Structures
- https://www.youtube.com/watch?v=ULt4aEst4mM&list=PLyqSpQzTE6M_RfjEQMK7_L-UvxAMhplUT

	Description of CO	PO6
CO1	Understanding the basic design of masonry wall and the design principles applied for earthquake resistance	3
CO2	Ability to design of reinforced masonry walls and understanding concepts of loads in masonry retaining walls	2
CO3	Understanding the basic design of timber components (beams, columns and trusses) in the buildings.	2

AR25403	Water Supply and Sanitation in Buildings	L	T	P/S	C
		2	0	2	4
Course Objectives: - To introduce and give knowledge about the different environmental services for human environment- water supply, sewerage, drainage, waste management and plumbing systems. - To give familiarity about sustainable practices and systems for environmental services. - To enable the conceptual design of small buildings/ campuses for environmental services. - To study about the grey water and rain water harvesting					
Water Supply System: Water supply system at macro level - sources, pumping, reservoirs, water treatment, tanks, piping systems and materials. Quantitative and qualitative requirements of water for different activities in building (non-highrise and high-rise) and campuses. Overhead tanks, underground sumps, firefighting storage, water meter, R.O. Plant, water heating systems, solar water heaters, fixtures and fittings for a small building/ campus. Relevant NBC codes and Design calculations for the same and related mechanical equipment. Sustainable practices and systems. Site visits with documentation in the form of sketches/ drawings/ photos. 14 periods					
Sewerage System: Sewage and sullage. Sewerage systems. Different types/stages of sewage treatment at city level. Sewer line, gradients, manholes, inspection chambers. One pipe/ two pipe plumbing systems. Sewage treatment at building (non-highrise and high-rise) and campuses -sewage treatment plants, septic tank, leach pits. Sustainable practices and systems. Relevant NBC codes. Site visits with documentation: in the form of sketches/ drawings/ photos.					
Drainage and Waste Management: Storm water drains at city level. Types of pipe. Storm water gutter. Drainage systems in building (non-highrise and high-rise) and campuses. Roof drainage. Rain water harvesting and storage sumps. Sustainable practices and systems. Relevant NBC codes. Solid waste- types, segregation and refuse collection. Disposal - Incinerator, composting, vermicomposting, sanitary land filling, bio gas system, modern renewable energy system. Site visits with documentation in the form of sketches/ drawings/ photos. 18 periods					
Plumbing Systems in Buildings: Basic principles of plumbing. Plumbing, sanitary fittings and their requirements for buildings - wash basins, water closets, urinals, bidets, sinks, gate valve, float valve, flap valve, ball valve, flush valve, etc, different types of taps, faucets, stop cocks, bib cocks, 'P', 'Q', 'S', floor/bottle traps. Relevant NBC codes. Efficient Plumbing fixtures-low flow, aerated, dual flush, sensor based. Understanding of products, product catalogues, service drawings. Site visits with documentation in the form of sketches/ drawings/ photos. 14 periods					

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Design for Environmental Services: Site planning, building and room design principles for water supply, sewage and storm water in an integrated manner for a small building. Understanding of service drawings. Site visits and documentation in the form of sketches/ drawings/ photos. Conceptual design for a small building.

14 periods

Total: 60 Periods

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage. One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage – 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

Required Reading

1. G.M. Fair, J.C. Geyer and D.Okin, 'Water and Waste Water Engineering Volume II', John Wiley and Sons, Inc. New York, 2010.
2. S.C.Rangwala, 'Water Supply and Sanitary Engineering', Charotar Publishing House, 2016.
3. Subhash Verma, 'Water and Wastewater Engineering Technology', CRC Press 2024.

References:

1. 'Manual of Water Supply and Treatment', II Edition, CPHEEO, Ministry of Works and Housing, New Delhi, 1999.
2. AFE Wise, JA Swaffied Water, 'Sanitary and Waste Services in buildings', V Edition, Mitchell Publishing, Co. Ltd., 2002.
3. Punmia B.C, 'Waste Water Engineering', Laxmi Publications, 2009.
4. Arceivala S.J, 'Waste Water Treatment for Pollution Control', Tata McGraw Hill, 2008.
5. 'National Building Code', Bureau of Indian Standards.
6. 'Indian Standard Code of Practice for Water Supply in Buildings, IS :2065 – 1983'
7. Izharul Haq, Ankit P. Goswami & Ajay S. Kalamdhad, 'Water and Wastewater: Assessment, Treatment and Management Using New Technologies' Springer, (2025)

E-Resources

1. Water treatment, distribution, design standards (Unit I & II) CPHEEO Manual (Water Supply & Treatment) <https://cpheeo.gov.in>
2. Plumbing, drainage, sanitation (Unit IV & V) Bureau of Indian Standards – **National Building Code (NBC 2016)** <https://bis.gov.in>
3. Ministry of Housing and Urban Affairs Policies on urban water, sewage, and waste management <https://mohua.gov.in>
4. Water Supply , Environmental Engineering NPTEL Courses <https://nptel.ac.in>
5. WHO **Water Sanitation Resources**

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<https://www.who.int/teams/environment-climate-change-and-health/water-sanitation>

6. Rainwater harvesting, greywater reuse

<https://www.cseindia.org>

7. Water Efficient Plumbing Fixtures

<https://mohua.gov.in/upload/uploadfiles/files/Part-A-Chapter-15-Water-Efficient-Plumbing-Fixtures.pdf>

	Description of CO	PO6	PO7
CO1	Ability to understand environmental services from macro to micro level human environment.	1	3
CO2	Ability to adopt sustainable practices and systems for environmental services.	1	3
CO3	Ability to design environmental services in a building/ small campus.	1	3
CO4	Ability to understand relevant codes for application.	2	3

AR25404	Building Construction with Basic Materials	L	T	P/S	C
		1	0	3	4
Course Objectives: • To give introduction to the basic materials such as lime, mud, stone, brick, bamboo, thatch, straw and timber. • To give knowledge about construction using basic materials in simple situations. • To facilitate in the design of buildings using a combination of the basic materials.					
Lime, Mud and Stone for Structural use and Finishes: Lime as basic binding material/mortar. Extracting, slaking, hardening, storage, precautions in handling. Lime putty. Mud as basic material for construction, Mud plaster and mortar. Types of soil and soil stabilisation. Mud products- stabilised blocks, etc., Mud walls construction - cob, rammed earth, wattle and daub, adobe, compressed stabilised earthen blocks. Foundation and plinth for mud structures. Damp and weatherproofing of mud structures. Mud flooring. Mud domes. Stone in building construction. Sources, characteristics selection, seasoning, dressing, testing, deterioration, preservation and durability of stone. Basic principles of masonry with stone. Different types of stone masonry walls. Mortar, plastering, pointing and finishes for stone masonry. Structural use of stone masonry in foundation, walls, piers, columns, arches and lintels. Masonry integrated elements such as openings, cornices and copings. Structural use of stone for beams and slabs. Understanding all the above through sketches/ drawing/ models/ product catalogues/site visits. 12 Periods					
Brick and Clay Products for Structural use and Finishes: Outline manufacture of brick. Types of brick and clay products in building construction. Brick for masonry walls. Roof tiles- pan/ pot tiles, Mangalore pattern tiles. Flooring and paving- brick tiles, clay tiles, ceramic tiles and vitrified tiles. Basic principles of masonry with brick. Types of brick bonding. Mortar, plastering, pointing and finishes for brick masonry. Structural use of brick masonry in foundation, walls, piers, columns, arches and lintels. Masonry integrated elements such as openings, cornices and copings. Structural use of brick for roofing as Madras Terrace. Introduction to innovative and composite construction using brick and clay products - prefabricated brick panels, precast curved brick arch panels, reinforced brick/ reinforced brick concrete slabs, prefabricated floor/ roof using structural clay units, Hourdi block roofing, Understanding construction principles and procedures through sketches/ drawings/ models / site visits/ documentation. 18 Periods					

Bamboo, Straw, Thatch and Timber for Structural use and Finishes: Bamboo-anatomy, properties, strength, processing, harvesting. Working with bamboo. Treatment, preservation and uses of bamboo. Joints in Bamboo. Framed construction for walls and floors. Techniques of construction of roofs with bamboo.

Straw and thatch as building materials. Physical aspects. Properties with respect to fire, moisture, insects and pests. Thatch and straw bale roofing details.

Types of timber, their classification and characteristics. Timber sources, defects, conversion, seasoning, storage, preservation, finishes.

Joints in timber. Timber frames for walls. Timber flooring. Timber staircase. Construction of timber roof trusses (to include lean to, couple, collar, king post, queen post and roof covering material). Timber partitions, panelling and false ceiling.

Understanding construction principles and procedures through sketches/ drawings/ models / site visits/ documentation.

18 Periods

Design with Basic Materials: Design of a small and simple structure for a specific purpose using basic building materials in appropriate and innovative combinations and design Design to be submitted in the form of sketches/ drawings/ detailing/model.

12 Periods

Total: 60 Periods

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage.

One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage - 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

References:

1. Roy Chudley, Roger Greeno, 'Building Construction Handbook', Routledge, 2010.
2. KlansDukeeberg, Bambus – Bamboo, Karl Kramer Verlag Stuttgart Germany, 2000.
3. National Building Code Of India 2016- Part 6 Structural Design- Section 3 Timber and Bamboo.
4. Francis D.K Ching, 'Building Construction Illustrated', John Willey and Sons, 2014.
5. Willis H Wagner and Howard Bud Smith, 'Modern Carpentry', Good Heart–Wilcox Publishers, Portland, 2016.
6. Barry, 'Construction of Buildings, Volume 1and2', Blackwell Publishing Ltd., Oxford, 2005.
7. American Institute of Timber Construction (AITC), 'Timber Construction Manual', Wiley Publishers, 2004.

Required Reading:

1. S.C Rangwala 'Building Construction' Charotar Publishing House, India, 2016

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2. W.B. McKay, 'Building Construction', Person India, Vol, 1 2013, Vol II, 2013.
3. Laurie Baker, MUD-Costford Publication, 1988
4. S.K.Sharma, 'A Text book of Building Construction', S. Chand and Co Ltd., New Delhi, 2013
5. S.K. Duggal, 'Building Materials', New Age International Publishers, 2016.
6. S. C. Rangwala, 'Engineering Materials', Charotar Publishing House India, 2015.
7. Ghanshyam Pandya, M.P. Ranjan, Nilamlyer, 'Bamboo and Cane Crafts of Northeast India', National Institute of Design, 2004

E Resources/ E Books:

1. <http://www.efi-costarica.com/antique-furniture-joints.html>
2. How to make joints - <http://woodworking.about.com/od/joinery/tp/JoineryHub.htm>
3. Common woodworking joints - <http://www.raygirling.com/wwjoints.htm>
4. Exotic wood - <http://www.macbeath.com>,
5. Overview of wood working tools - <http://www.technologystudent.com/equip1/equipex1.htm>
6. Overview of wood working joints - <http://www.technologystudent.com/joints/joindex.htm>
7. Bamboo Joints Review-Millennium green bridge School Bali /Hardy
<https://pdfs.semanticscholar.org/397c/82fe51995f69970af873818d830fc1027f9d.pdf>

	Description of CO	PO6	PO8
CO1	Familiarity with the properties and uses of basic building materials.	3	2
CO2	Knowledge about the construction details of the basic building materials.	3	1
CO3	Ability to design buildings using a combination of basic materials.	3	2

AR25405	Site Surveying and Planning	L	T	P/S	C
		1	0	3	4
Course Objectives: • To inform about the ways in which the characteristics of sites can be understood. • To enable an understanding of the macro and micro impact of buildings on it. • To give understanding of the potential/ limitations site offers to the design of buildings. • To equip students with an understanding of key terminologies, techniques, and methodologies related to, site surveying, site analysis planning and integration of essential site services required for building development. • To explore all the above through a project.					
Introduction to Site and Site Surveying: Definition of plot, site, land and region, units of measurements. Introduction to survey and need for surveying. Methods of surveying and context of use. Chain survey and Triangulation - instruments used, method of survey and plotting into survey drawing. Plain table, Compass and theodolite surveys - method, instruments used and application. Modern surveying Instruments such as Electronic Distance Measurement EDMs and Total Stations, Drone survey and their application. Understanding of administrative maps and site drawings, including FMB-Field Measurement Book. Introduction to measuring a site, drawing out a site plan from measurements and computing area by geometrical figures and other methods. Introduction to marking plans, layout plans and centre-line plans. Importance and procedure for making these drawings and dimensioning. Procedure and precautions of setting out a plan on site. Understanding the above through site visits to real projects. 15 Periods					
Site Context and Analysis: Detailed understanding of context of the Site -Context evaluation based on Physical factors- Climate, - Topography, Geotechnical, Utilities, Surrounding density, Morphology, Cultural Factor- Site history, Heritage and Imageability, Socio-Economic -land use ownership and control, economic value, Local bye law and regulation and other Codes Introduction to master plans, land use for cities, development control rules. Site selection criteria for different building typologies. Impact of building developments on the surroundings including aspects such as traffic, noise, pollution, microclimate, etc., especially in the context of large scale projects. Understanding the above through real projects/ case studies. Site as offering potential/ limitations to architectural design. Importance of site analysis. On site and off site factors. Analysis of natural, cultural and aesthetic factors. Factors to include topography, hydrology, soils, vegetation, climate and microclimate, surface drainage, accessibility, size and shape, infrastructure, sources of water supply and means of disposal system, visual aspects, context of built environment. Introduction to Site selection with detailed analysis involving aspects like soil types, contours, slope analysis, grading process, grading criteria, functional and aesthetic considerations. Maps of matrix analysis and composite analysis methods. Understanding the above through real projects/ case studies. 15 Periods					

Principles of Site Layout and Development: Organisation of pedestrian and vehicular circulation. Geometric calculation for movement. Types of roads, hierarchy of roads, networks, road widths and parking regulations. Principles of positive drainage and grading for drainage. Location and design of sewage treatment plants. Methods to control soil erosion. Location of utility lines to simplify maintenance. Planning for rain water harvesting. Incorporation of services such as electricity, drinking water pipelines, fire hydrants, communication and networking facilities at site. Vegetation, landforms and water as modifiers of microclimate.

Understanding the above through real projects/ case studies.

15 Periods

Exercise in Site Surveying and Planning

Application of all the knowledge gained in previous units through a real/ hypothetical project involving a real site. The process would involve choosing site for a building typology or vice versa, field exercise in measuring and drawing the site, detailed site analysis, schematic site layout and development. The project will be explored through analysis/ models/ sketches/ drawings.

15 Periods

Total: 60 Periods

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage.

One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage - 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

Required Reading

1. Kevin Lynch, 'Site Planning', LLC Press, 2012.
2. A.M. Chandra , Surveying, New Age International PvtLtd, Publishers, 2005
3. B.C Punmia, Jain Ashok Kumar, Jain.A.K, Surveying Vol 2, 2005

References:

1. Edward. T. White, 'Site Analysis', Archi Basic Press, 2014.
2. B.C.Punmia et al, 'Surveying Vol.I', Seventeenth Edition, Laxmi Publications, 2016..
3. Strom Steven, 'Site Engineering for Landscape Architects', John Wiley and Sons, 2013.
4. 'Development Control Rules', CMDA 2008, TNCBDR 2019
5. Genevieve S. Baudoin, 'Interpreting Site: Studies in Perception, Representation, and Design', Routledge, 2015.
6. Thomas Russ, 'Site Planning and Design Handbook', McGraw Hill, 2009

E Resources/ E Books:

1. 100 SITE ANALYSIS ESSESNTIALS An Architects Guide -PETER F and IAIAN J- RIBA PUBLISHING-2024

Padeepz App - For Anna University

<https://www.scribd.com/document/698662934/100-Site-Analysis-Essentials>

2. WAGGA RIVERSIDE-SITE ANALYSIS AND CONCEPT PLAN-City of Wagga, Australia,2019

https://wagga.nsw.gov.au/_data/assets/pdf_file/0008/154979/Riverside-Stage-2_Site-Analysis-ConceptPlan.pdf

	Description of CO	PO1	PO6	PO7	PO8
CO1	Familiarity with aspects of tools, maps and site drawings.	2	2	2	3
CO2	Ability to analyse site context and its parameters.	2	3	3	3
CO3	Ability to perceive limits and potentials of site towards architectural design.	2	3	2	3
CO4	Ability to apply principles of organizing functional elements in layout and sequence.	3	2	2	3
CO5	Ability to apply factors of site development.	2	2	2	3

AR25406	Rural Habitat Design Studio	L	T	P/S	C
		0	0	9	9
Course Objectives: • To create understanding of human built environment as a holistic, living entity from macro to micro scales, and shaped by geographic and socio-cultural forces as well as by historic, political and economic factors, through study of and design within the context of rural settlements. • To enable a comprehensive study of rural settlement and architecture in order to understand them as exemplar of collective design that evolved through various parameters. • To observe changes in the above, analyse their nature and causes for them. • If required, to explore possible policy and physical interventions towards positive changes within the context studied. • To enable design process that engages context and community.					
Rural settlements offer an opportunity to understand basic aspects of human built environment and what goes into its making to influence it. The interrelationship between built form and society will be studied, understood and established, starting from either end as required. Study of specific modes of rural/vernacular/traditional settlement pattern, architecture including their morphology, local materials and construction techniques, details, meaning, etc., will be done to give an insight into the particulars and universals of architecture including design principles of scale, proportion, figure ground etc.. Appropriate tools and processes can be used to aid the understanding. These include different methods of historical and socio-cultural study that includes myths and beliefs, oral history, discussions, information collection, surveys, maps. Also detailed perceptual studies of the rural built environment based on sensorial data of sight, haptic, movement, sound, smell and imagery shall help in the analysis. The documentation shall be through sketches ,models, drawings, demographic study, assimilation and analysis. Transformations across time need to be traced to understand constants and dynamics in human society. They will also be critically evaluated through discussions with experts. Rising from this, future changes can be projected/ envisaged and if found required, policy and physical interventions can be suggested/ explored. The physical interventions found necessary will be taken up as design situations. This could range from individual to community level and involve any aspect of the physical environment (including building projects) as the situation/viewpoint warrants. If the context does not warrant a building need, a small community oriented building design will be given as a separate project in addition to the rural project. For building projects, the scale and complexity of planning and construction usually involved will be simple - small or medium span, ground plus two storeyed maximum, simple horizontal and vertical movement, simple/ local materials and construction, passive energy.					
Total: 135 Periods					

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Weightage: Continuous Assessment: 60%, End Semester Examinations: 40%.

Assessment Methodology: Three Assessments with equal weightage.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage - 33.33%.

Required Reading

1. Amos Rapoport, 'House, Form and Culture', Prentice Hall, 1969.
2. Bernard Rudofsky, 'Architecture without Architects', University of New Mexico Press, 1987.
3. Rajendra Kumar Sharma, 'Rural Sociology', Atlantic, 2011.

References:

1. Ramachandran H, 'Village Clusters and Rural Development', Concept Publications, Reprint 2024.
2. Thorbeck D, 'Rural Design', Routledge, 2012.
3. Hassan Fathy, 'Architecture for the Poor', University of Chicago Press, 1973.
4. Juhani Pallasmaa, 'Eyes of the Skin: Architecture and the Senses', John Wiley and Sons, 1996

E-Resources

1. **Architecture of the Seven Senses**
<https://micharchijourney.wordpress.com/wp-content/uploads/2014/12/synopsis-1.pdf>
2. **Bijlani, H.U.. "Rural housing in India." *Habitat International* 6, no. 4 (1982): 513-525** <https://architexturez.net/doc/10-1016/0197-39758290084-4>
3. **Jay Thakkar, Skye Morrison, Matra -Ways of Measuring Vernacular Built Forms of Himachal Pradesh**
www.researchgate.net/publication/307538994_Matra_Ways_of_Measuring_Vernacular_Built_Forms_of_Himachal_Pradesh/link/57c80e6908aefc4af34e7d52/download?tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19

	Description of CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO12
CO1	Ability to collect, assimilate and integrate knowledge in a holistic manner.	2	3	2	3	3	2	3	3	3	2
CO2	Sensitivity towards the nature and values of unselfconscious and collective design as well as the interconnectedness	2	3	2	3	3	2	3	3	3	2

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	Description of CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO12
	of human society and environment.										
CO3	Ability to observe and analyse changes in the above.	1	2	2	1	2	3	2	3	2	3
CO4	Ability to project future transformations and give possible/ appropriate ways to address issues, if any.	1	2	2	3	2	3	3	3	2	3
CO5	Sensitivity in design approach in community oriented projects with respect to context, collective values and needs.	2	3	2	3	3	3	3	3	3	3