AMRITA SCHOOL OF ARCHITECTURE

BACHELOR OF ARCHITECTURE (B. Arch)
CURRICULUM 2025

(2025 Onwards)

GENERAL INFORMATION

Abbreviations

L	-	Lecture
T	-	Tutorial
P	-	Practical
PO	-	Program Outcome
PSO	-	Program Specific Outcome
CO	-	Course Outcome
C	-	Credit
S	-	Studio
PC	-	Professional Core
BSAE	-	Building Sciences & Applied Engineering
PE	-	Professional Elective
OE	-	Open Elective
PAEC	-	Professional Ability Enhancement Course
SEC	-	Skill-enhancement Course
VAC	-	Value-added Course

Course Outcome (CO) – Statements that describe what students are expected to know and are able to do at the end of each course. These relate to the skills, knowledge and behaviour that students acquire in their progress through the course.

Program Outcomes (PO) – Statements that describe what students are expected to know and be able to do upon graduating from the program. These relate to the skills, knowledge, attitude and behaviour that students acquire through the program.

Program Outcomes for B.Arch. (Bachelor of Architecture)

PO1 **Domain specific Knowledge** - develop a comprehensive understanding of the foundational philosophy and essential principles that inform the multidimensional and multifaceted nature of architecture.

PO2 **Contextual and Regional Understanding** - understand and respond to regional diversities, vernacular traditions and indigenous practices, especially drawing from Indian Knowledge Systems.

PO3 **Innovation and Adaptability** - embrace change as a catalyst for creative thinking, innovation and reinterpretation of architectural practices to meet evolving societal needs.

PO4 **Sustainable and Humane Design** - evaluate and apply sustainable practices, technological advancements and ecological principles with a critical understanding of their socio-cultural and ethical implications.

PO5 **Interdisciplinary Integration** - integrate knowledge from diverse disciplines such as ecology, philosophy, history, social sciences and Indian Knowledge Systems to address complex architectural and urban challenges.

PO6 **Critical and Reflective Thinking** - apply critical inquiry, philosophical reasoning and reflective thinking to question conventional norms and develop a deeper understanding of architecture and demonstrate the ability to identify, analyse and solve complex design problems with informed judgment and creativity.

PO7 **Ethical Responsibility and Compassion** - embody ethical awareness, compassion and social responsibility in all design decisions, contributing to inclusive, equitable and just environments.

PO8 **Communication, Collaboration and Teamwork** - communicate ideas effectively through multiple mediums and work collaboratively and respectfully in multidisciplinary teams to co-create innovative and contextually responsive design solutions.

PO9 **Lifelong and Independent Learning** - cultivate habits of self-directed, lifelong learning and develop the capacity to learn continuously through curiosity, experimentation and exploration.

PO10 **Vision for the Future** - develop a forward-looking vision for architecture that balances tradition, innovation and cutting-edge technology, rooted in compassion, sustainability and human well-being.

PO11 **Research and Evidence-Based Practice** – Engage in rigorous inquiry and utilize qualitative and quantitative research methods to inform design decisions, assess performance, and contribute to the evolving body of architectural knowledge.

Program-Specific Outcomes

PSO1. Design Excellence through Indian Knowledge Systems
Demonstrate the ability to create contextually responsive and sustainable architectural solutions by drawing from Indian Knowledge Systems, vernacular traditions and regional practices, blending cultural sensitivity with innovative spatial thinking.

PSO2. Technological and Technical Proficiency
Integrate traditional construction knowledge with emerging digital tools, building sciences, and smart technologies to develop accurate architectural documentation, performance-based design solutions and context-sensitive applications of cutting-edge systems.

PSO3. Ethical and Future-Ready Professional Practice
Apply principles of ethical practice, project management and participatory design while envisioning an architectural future that harmonizes tradition, sustainability and global innovation with compassion and social responsibility.

Mapping of Courses with Program-Specific Outcomes

PSO 1

1. History & Culture – I
2. History & Culture – II
3. Art Appreciation
4. Architectural Design Studio – I
5. History & Culture – III
6. History & Culture – IV

PSO 2

1. Foundation Design Studio – I
2. Foundation Design Studio – II
3. Building Materials & Technology - I
4. Structural Systems in Design – I
5. Building Materials & Technology – II
6. Integrated Building Systems – I
7. Structural Systems in Design – II
8. Architectural Working Drawing
9. Structural Systems in Design – III
10. Building Physics & Energy Modelling
11. Integrated Building Systems – II

12. Structural Systems in Design – IV
13. Advanced Building Construction

PSO 3

1. Principles of Environmental Design
2. Architectural Design Studio – II
3. Architectural Design Studio – III
4. Architectural Design Studio – IV
5. Professional Training
6. Architectural Design Studio – V
7. Research in Architecture
8. Architectural Project Management
9. Architecture Design Studio – VI
10. Research Writing
11. Design Entrepreneurship
12. Architectural Design Thesis
13. Architectural Practice & Business Management

General Framework by Council of Architecture, India

(Appendix A of Minimum Standards of Architectural Education Regulations, 2020)

Category	Description	Suggested Weightage in Credits	Weightage given in syllabus
Professional Core Course (PC)	A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course	50%	60%
Building Sciences and Applied Engineering Course (BSAE)	A course which informs the Professional core and should compulsorily be studied.	20%	14%
Professional Elective (PE)	A course which may be very specific or specialized or advanced or supportive to the discipline or subject of study or which provides an extended scope	10%	6%
Open Elective (OE)	A course which enables an exposure to some other discipline or subject or domain or nurtures the candidate‘s proficiency or skill. Can be replaced by Professional Elective.	5% (can be included in PE also)	3%
Professional Ability Enhancement Course (PAEC)	A type of Employability Enhancement Course	10%	12%
Skill Enhancement Course (SEC)	A type of Employability Enhancement Course	5%	5%

Professional Electives Themes

A. Design Technology & Innovation

- AI & Emerging Technologies in Design
- Product Design
- Disaster Resilience and Management
- Advanced Materials and Digital Fabrication

B. Theory, Research & Communication

- Design Journalism
- Architectural Theory
- Retail and Visual Merchandising in Interiors
- Immersive Technologies for Space Visualization

C. Professional Practice & Spatial Specializations

- Building Information Modelling (BIM) for Designers
- Furniture Design
- Advanced Landscaping
- Lighting Design
- Vastu Shilpashastra
- Architectural Conservation

SEMESTER I

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC101	Foundation Design Studio – I	2-4-16	14
2	PC	25ARC102	History & Culture - I	2-0-0	2
3	PC	25ARC103	Art Appreciation	2-0-0	2
4	VAC/SEC	22ADM101	Foundations of Indian Heritage	2-0-1	2
5	VAC/SEC	22AVP103	Mastery Over Mind	1-0-2	2
			TOTAL	31	22

SEMESTER II

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC111	Foundation Design Studio – II	2-4-16	14
2	BSAE	25ARC112	Building Materials & Technology - I	1-0-2	2
3	PC	25ARC113	History & Culture - II	2-0-0	2
4	BSAE	25ARC114	Structural Systems in Design - I	1-1-0	2
5	VAC/SEC	22ADM111	Glimpses of Glorious India	2-0-1	2
			TOTAL	31	22

SEMESTER III

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC201	Architectural Design Studio – I	2-4-16	14
2	BSAE	25ARC202	Building Materials & Technology - II	3-0-2	4
3	PC	25ARC203	History & Culture - III	2-0-0	2
4	BSAE	25ARC204	Principles of Environmental Design	2-0-0	2
5	VAC/SEC		Amrita Value Programme I	1 0 0	1
			TOTAL	32	23

SEMESTER IV

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC211	Architectural Design Studio – II	2-4-16	14
2	BSAE	25ARC212	Integrated Building Systems - I	2-1-2	4
3	PC	25ARC213	History & Culture - IV	2-0-0	2
4	BSAE	25ARC214	Structural Systems in Design - II	1-1-0	2
5	VAC/SEC		Amrita Value Programme II	1-0-0	1
			TOTAL	32	23

SEMESTER V

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC301	Architectural Design Studio – III	2-4-16	14
2	BSAE	25ARC302	Architectural Working Drawing	2-0-4	4
3	BSAE	25ARC303	Structural Systems in Design - III	1-1-0	2
4	BSAE	25ARC304	Building Physics & Energy Modelling	1-1-0	2
5	PE		Elective – I	1-1-0	2
			TOTAL	34	24

SEMESTER VI

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC311	Architectural Design Studio – IV	2-4-16	14
2	BSAE	25ARC312	Integrated Building Systems - II	2-1-2	4
3	BSAE	25ARC313	Structural Systems in Design - IV	1-1-0	2
4	BSAE	25ARC314	Advanced Building Construction	1-1-0	2
5	PE		Elective – II	1-1-0	2
			TOTAL	33	24

SEMESTER VII

S.No.	Cat.	Code	Title	L T P	Credit
1	PAEC	25ARC498	Professional Training		20
			TOTAL		20

SEMESTER VIII

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC411	Architectural Design Studio – V	2-4-16	14
2	PAEC	25ARC412	Research in Architecture	1-1-0	2
3	PAEC	25ARC413	Architectural Project Management	2-0-0	2
4	PE		Elective – III	1-1-0	2
5	OE		Elective – IV	1-1-0	2
			TOTAL	30	22

SEMESTER IX

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC501	Architecture Design Studio – VI	2-4-16	14
2	PAEC	25ARC502	Research Writing	1-1-0	2
3	SEC	25ARC503	Design Entrepreneurship	2-0-0	2
4	PE		Elective – V	1-1-0	2
5	PE		Elective – VI	1-1-0	2
			TOTAL	30	22

SEMESTER X

S.No.	Cat.	Code	Title	L T P	Credit
1	PC	25ARC511	Architectural Design Thesis	2-4-20	16
2	PAEC	25ARC512	Architectural Practice & Business Management	2-0-0	2
3	OE		Elective – VII	1-1-0	2
			TOTAL	30	20

TOTAL CREDITS	**222**

AMRITA VALUE PROGRAMMES FOR UG PROGRAMMES

Course Code	Title	L-T-P	Credits
22ADM201	**Strategic Lessons from Mahabharata**	**1-0-0**	**1**
22ADM211	**Leadership from Ramayana**	**1-0-0**	**1**
22AVP210	Kerala Mural Art and Painting	1-0-0	1
22AVP201	Amma's Life and Message to the modern world	1-0-0	1
22AVP204	Lessons from the Upanishads	1-0-0	1
22AVP205	Message of the Bhagavad Gita	1-0-0	1
22AVP206	Life and Message of Swami Vivekananda	1-0-0	1
22AVP207	Life and Teachings of Spiritual Masters of India	1-0-0	1
22AVP208	Insights into Indian Arts and Literature	1-0-0	1
22AVP213	Traditional Fine Arts of India	1-0-0	1
22AVP214	Principles of Worship in India	1-0-0	1
22AVP215	Temple Mural Arts in Kerala	1-0-0	1
22AVP218	Insights into Indian Classical Music	1-0-0	1
22AVP219	Insights into Traditional Indian Painting	1-0-0	1
22AVP220	Insights into Indian Classical Dance	1-0-0	1
22AVP221	Indian Martial Arts and Self Defence	1-0-0	1
22AVP209	Yoga and Meditation	1-0-0	1

Elective - I

[Course Code]	TITLE	L-T-P
25ARC331	AI & Emerging Technologies in Design	**1-1-0**
25ARC332	Building Information Modelling (BIM) for Designers	**1-1-0**
25ARC333	Design Journalism	**1-1-0**

Elective - II

[Course Code]	TITLE	L-T-P
25ARC341	Product Design	**1-1-0**
25ARC342	Architectural Theory	**1-1-0**
25ARC343	Furniture Design	**1-1-0**

Elective - III

[Course Code]	TITLE	L-T-P
25ARC431	Retail and Visual Merchandising in Interiors	**1-1-0**
25ARC432	Disaster Resilience and Management	**1-1-0**
25ARC433	Advanced Landscaping	**1-1-0**

[Course Code]	**Elective - IV**	L-T-P	1-1-0
	Open Elective		

Elective - V

[Course Code]	TITLE	L-T-P
25ARC531	Lighting Design	**1-1-0**
25ARC532	Immersive Technologies for Space Visualization	**1-1-0**
25ARC533	Advanced Materials and Digital Fabrication	**1-1-0**

Elective - VI

[Course Code]	TITLE	L-T-P
25ARC541	Architectural Conservation	**1-1-0**
25ARC542	Vastu Shilpashastra	**1-1-0**

[Course Code]	**Elective - VII**	L-T-P	1-1-0
	Open Elective		

SYLLABUS

SEMESTER 1
(FOUNDATION STUDIO)

25ARC101	**Foundation Design Studio – I**	L – T – P	2-4-16

Course Objectives

- To develop fundamental skills in visual representation
- To nurture material exploration and model-making abilities
- To provide a conceptual foundation in design theory
- To initiate critical thinking through basic design exercises
- To develop clarity in design thinking through writing and verbal articulation

Course Outcomes

After completing this course, students will be able to:

CO1 : Demonstrate the ability to observe, analyse and express form, space and structure through various modes of visual communication such as freehand sketching and orthographic drawing.

CO2 : Apply hands-on skills in material handling and model-making to explore spatial relationships, form, structure, and scale using a range of basic materials and techniques.

CO3 : Illustrate an understanding of foundational design principles, elements of design and theories that influence spatial perception and aesthetics, fostering an informed design sensibility.

CO4 : Engage in iterative design processes to solve introductory design problems, reflecting an understanding of abstraction, composition, spatial logic and user-centred design.

CO5 : Effectively communicate ideas and reflections through structured writing and verbal presentations

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	–	1	2	3	–	3	2	–	–	2	3	–
CO2	3	1	–	2	2	2	–	2	2	–	–	2	3	2
CO3	3	3	–	2	3	3	2	2	2	–	–	3	2	2
CO4	3	2	–	2	3	3	2	3	2	2	–	3	2	2
CO5	2	–	2	–	1	2	1	3	3	–	–	2	–	1

Module 1: Visual Representation

Freehand sketching; introduction to drawing and work culture; scale (metric and imperial); plane geometry; orthographic projections and solid geometry; surface development; visual communication techniques; objects and their assembly

Module 2: Material Exploration
Working with different architectural materials such as paper, plaster, clay, fabric etc.; studio work culture; assembly techniques; tools

Module 3: Theory of Design
Elements of design; principles of design; colour theory; nature as a primary reference in design; introduction to design

Module 4: Basic Design
Exploration of 2D and 3D compositions; application of colour theory; space illustrations and creative expression; designs in nature

Module 5: Writing
Descriptive writing, reflective writing, building a design vocabulary, introduction to verbal presentations

Reading Material

1. *Francis D.K. Ching, Architectural Graphics, Sixth Edition, John Wiley & Sons, 2015*
2. *Arthur L. Guptill, Rendering in Pen and Ink, Watson Guptill Publications, 1983*
3. *Paolo Belardi, Why Architects Still Draw, The MIT Press, 2014*
4. *Yatin Pandya, Elements of Space Making, Mapin Publishing Pvt. Ltd., 2007*
5. *Francis D.K. Ching, Architecture - Form, Space, and Order, John Wiley & Sons, 1979*
6. *David W. Orr, The Nature of Design: Ecology, Culture, and Human Intention, Oxford University Press, 2002*
7. *Rudolf Arnheim, Visual Thinking, University of California Press, 1969*
8. *Kimberly Elam, Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press, 2001*
9. *Francis D.K. Ching & Steven P. Juroszek, Design Drawing, Second Edition, John Wiley & Sons, 2010*
10. *Don Norman, The Psychology of Everyday Things, Basic Books, 1988*
11. *Matthew Frederick, 101 Things I Learned in Architecture School, The MIT Press, 2007*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

25ARC102	**History & Culture – I**	L– T – P	2 – 0 – 0

Course Objectives

- To develop an understanding of culture as a critical driver in shaping the built environment
- To provide a comprehensive understanding of the key knowledge systems, cultural movements, and sociological changes that have influenced design styles across different civilizations.

- To understand the relationship between human beings and nature throughout history and how it has shaped design practices.
- To introduce students to the historical evolution of architecture and interior spaces across civilizations

Course Outcomes

After completing this course, students will be able to:

CO1 : Demonstrate an understanding of how worldviews, rituals, traditions, crafts and cultural practices manifest in architecture, spatial organization and interior environments.

CO2 : Identify and interpret key knowledge systems, philosophical ideas, cultural movements and sociological shifts that have shaped design expressions, styles and construction practices across civilizations.

CO3 : Demonstrate an understanding of the evolving relationship between human societies and nature, and how this interplay has influenced design features.

CO4 : Describe the major architectural and interior design developments across global civilizations, recognizing stylistic features, construction techniques, spatial typologies, and the socio-political contexts in which they emerged.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	3	–	2	2	3	3	2	1	–	–	3	–	2
CO2	3	3	–	1	3	3	2	1	1	–	2	3	–	2
CO3	2	2	–	3	3	2	2	–	1	–	2	2	–	3
CO4	3	2	–	2	3	3	1	2	1	–	2	3	–	2

Module 1: Self and the Ancestry

Introduction to the idea of personal identity in design; how ancestry, culture, and geography shape design thinking; overview of regional architecture: influences of climate, materials, and history; guide to researching family history and genealogy; identification of regional design styles; reflection on how personal history and ancestry have shaped one's perception of design.

Module 2: Origins of Design Thinking

Introduction to human evolution and its relevance to design thinking; cognitive revolution; agricultural revolution; early human settlements and their evolution.

Module 3: Relationship between Human and Nature

Evolving relationship between human beings and nature through architecture; early sustainable design principles inspired by nature; exploration of ancient buildings designed with natural elements.

Module 4: Chronology of Architecture

Evolution of architecture across civilizations; influence of religion, politics, and cultural synthesis on Indian architecture; exploration of key architectural periods in India and rest of the world

Reading Material

1. *Yuval Noah Harari, Sapiens: A Brief History of Humankind, Harper, 2014*
2. *Spiro Kostof, A History of Architecture: Settings and Rituals, Oxford University Press, 1985*
3. *Patrick Nuttgens, The Story of Architecture, Phaidon Press Ltd., 1983*
4. *Takeo Kamiya, The Guide to the Architecture of the Indian Subcontinent, Architecture Autonomous, 2003*
5. *Christopher Alexander, The Timeless Way of Building, Oxford University Press, 1979*
6. *Francis D.K. Ching, Mark Jarzombek, and Vikramaditya Prakash, A Global History of Architecture, John Wiley & Sons, 2007*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

25ARC103	Art Appreciation	L – T – P	2 – 0 – 0

Course Objectives

- To introduce students to the philosophical and aesthetic foundations of Indian art and its inter-disciplinary nature.
- To provide students with historical insights into the emergence of art in ancient India and its connection to texts, rituals and performance.
- To familiarize students with the diverse sculptural and painting traditions of India and their role in shaping regional and cultural identities.
- To develop an appreciation for modern and contemporary aesthetic discourses in Indian and Western art

Course Outcomes

After completing this course, students will be able to:

CO1 : Demonstrate an understanding of the core aesthetic concepts and philosophical frameworks that inform Indian art

CO2 : Identify key features and cultural significance of prehistoric, proto-historic, and early classical Indian art

CO3 : Analyse the formal, material and narrative aspects of Indian sculpture and painting traditions, ranging from ancient cave murals to classical and vernacular regional forms, recognizing their contextual, stylistic and symbolic dimensions.

CO4 : Compare and critique key ideas of modern Indian aestheticians and western art philosophers and articulate how contemporary and cross-cultural discourses influence aesthetic and design sensibilities of the present.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	–	1	2	3	2	1	2	–	2	3	–	1
CO2	3	3	–	–	2	2	2	–	1	–	1	3	–	–
CO3	3	3	–	2	3	3	2	–	1	–	2	3	–	2
CO4	3	2	–	1	3	3	2	2	2	2	2	3	–	1

Module 1: Foundations of Indian Art and Aesthetics

Foundations of Indian art - aesthetics and philosophical foundations; inter-disciplinarity of Indian arts; art as yoga (Kalāyoga); six limbs of Indian Painting (Ṣaḍaṅga); Kāmasūtra of Vātsyāyana and

the Sixty-Four Arts (Chatuḥṣaṣṭi Kalāḥ); symbolism and iconography in Indian Art; Rasa theory

Module 2: Early and Classical Indian Art Traditions
Prehistoric and Proto-historic Art of India; Indus Valley Civilization; Birth of Art - episodes from the Viṣṇudharmottara Purāṇa and Citralakṣaṇa; Introduction to the Nāṭyaśāstra of Bharatamuni: The Foundational Text

Module 3: Indian Sculpture and Painting
Indian sculptural art - forms, materials and narratives; Indian painting traditions- from cave paintings (Ajanta, Bagh) to Pahari, Mughal, Rajput Schools to Thanka paintings and regional folk traditions (Mithila, Gond, Warli, Kalamkari, Pattachitra, Kalighat, etc.)

Module 4: Contemporary Discourses in Art
Modern Indian aestheticians - Rabindranath Tagore, Ananda K. Coomaraswamy, Govind Chandra Pandey, Kanti Chandra Pandey, Kapila Vatsyayan; introduction to western art philosophies, principles of modern and contemporary art

Reading Material

1. *Ananda Coomaraswamy, The Dance of Siva, Gyan Publishing House (2023)*
2. *Arindam Chakrabarti, The Bloomsbury Research Handbook of Indian Aesthetics and the Philosophy of Art, Bloomsbury Academic (Bloomsbury Publishing PLC), 2016*
3. *K. Krishnamoorthy, Some Thoughts on Indian Aesthetics and Literary Criticism (Special lectures, University of Mysore), University of Mysore, 1968*
4. *Susan L. Huntington (and John C. Huntington), The Art of Ancient India: Buddhist, Hindu, Jain, Weatherhill, 1985*
5. *H. Harvard Arnason and Elizabeth C. Mansfield, History of Modern Art, Seventh Edition, Pearson, 2013*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

Course Plan: 22ADM101 - *Foundations of Indian Heritage*

Amrita Vishwa Vidyapeetham
Amrita School of Spiritual and Cultural Studies ASSCS(Common Course for all UG First-Semester Students)

L-T-P-C: 2-0-1-2

A. Prerequisite: nil

B. Nature of Course: Theory

C. Course Objectives:

This Course offers students an opportunity to probe into the depths and richness of the Indian cultureand knowledge traditions.

It aims to provide a synoptic view of the grandiose achievements of India across diverse fields, enablingstudents to develop a comprehensive understanding of their country and its eternal values.

Aligned with the Indian Knowledge Systems (IKS) framework outlined in the National Education Policy,thiscourse serves as an introduction to the vast reservoir of wisdom and knowledge rooted in Indian heritage.

By the end of this course, students will develop a sense of pride in their heritage, appreciate theeternal values of India, and recognize the relevance of Indian wisdom in the modern world.

This also explores the historical contributions of India in various fields such as mathematics,science,medicine, astronomy, and architecture.

D. Course Outcomes:

After successful completion of the course, Students will be able to:

CO	Course Outcomes	Bloom's Taxonomy Levels and Mappi
CO1	**Course outcome 1: Decolonizing Mind** **Description:** Understanding the concept of decolonizing and making a student ready to get connected to the Indian Knowledge Systems **Statement**: The process seeks to dismantle the lingering effects of colonialism in educational practices and create a more inclusive academic environment that recognizes andvalues the experiences and knowledge of all groups, like Indigenous peoples, and other marginalized communities. It encourages the reclamation of cultural identity and heritage, instilling a sense of pride in indigenous knowledge and practices.	**BT Levels : Understand, Analyze, Apply** **PO9 – 2 (**Ethics. The sense of righteousness warranted for an engineering graduate will have a new dimension when decolonized and he/she can look at things in an Indian Sense of Dharma) **PO12 – 3** (Lifelong learning)

CO2	**Course outcome 2: Sustainability in thoughts** **Description:** Understanding and applying the ancient wisdomof *Yajna* concept as one of the sustainable frameworks of thoughts to address modern day challenges. **Statement**: Some of the ancient practices like *Panchamahayajna*, not only equip a student to apply ancient wisdom for modern day problems but also provides a sustainable thought framework. The student realizes more	**BT Levels : Understand, Apply, Evaluate** **PO6 – 2 (**Engineer and Society) **PO7 – 3 (**Environment and Sustainability) **PO8 – 2 (**Ethics) **PO9 – 2 (**Individual and Teamwork) **PO12 – 2** (Lifelong learning)

	than he/she as a separate entity, he/she is a part of the system that includes nature, nature forces and fellow beings. This idea instills a deep sense of connection to everything around and thus warrants a responsible and sustainable approach towards problems.	
CO3	**Course outcome 3: Understanding Human Personality** **Description:** The different layers of human personality as presented by *vedantic* model will be explored. **Statement**: Students will be able to assess the *vedantic* modelling of human personality as different layers. Synthesize this knowledge to gain deeper understanding of personality development and evaluate this perspective in relation to other psychological models of human personality.	**BT Levels : Remember, Understand, Evaluate** **PO6 – 2 (**Engineer and Society) **PO8 – 3 (**Ethics) **PO9 – 2 (**Individual and Teamwork) **PO12 – 2** (Lifelong learning)
CO4	**Course outcome 4: Applying Dharmic Framework Description:** Understanding and applying the concept of *Dharma* from the scriptures in modern context. **Statement**: Fundamental human pursuits have been studied, researched and categorised as four '*Purusharthas*' by the ancient seers of the land. '*Dharma'* (a word closely associated to ethics/righteousness etc) forms the bedrock of this framework. Seeing things through a Dharmic framework will automatically pave way for a sustainable future.	**BT Levels : Understand, Apply, Analyze** **PO6 – 3 (**Engineer and Society) **PO7 – 2 (**Environment and Sustainability) **PO8 – 3 (**Ethics) **PO9 – 2 (**Individual and Teamwork) **PO12 – 3** (Lifelong learning)
CO5	**Course outcome 5: Expansion of Self** **Description:** After gaining understanding of the self, furthering the idea into collectives like family, nation and society. **Statement**: Through the study of layers of human personally, one gains the wisdom to work towards individual personality development. However, the vision to see oneself as a part collectives like family, nation and society are very essential for emotional, behavioral growth progression.	**BT Levels : Understand, Analyze, Apply** **PO6 – 3 (**Engineer and Society) **PO7 – 3 (**Environment and Sustainability) **PO8 – 2 (**Ethics) **PO9 – 3 (**Individual and Teamwork) **PO10 – 2 (**Communication) **PO11 – 2 (**Project management and Finance) **PO12 – 2** (Lifelong learning)

CO6	**Course outcome 6: Integrating Lessons from History** **Description:** Integrate invaluable lessons from history toachieve excellence in life. **Statement**: History as a testimony of past interactions provides invaluable insights for achieving progress. Focusing on historical interactions that happened within the nation and beyond the boundaries provide lessons that, in future can reflect as visionary decisions of the learner.	**BT Levels : Remember, Analyze, Apply** **PO6 – 2 (**Engineer and Society) **PO8 – 3 (**Ethics) **PO9 – 2 (**Individual and Teamwork) **PO10 – 2 (**Communication) **PO11 – 3 (**Project management and Finance) **PO12 – 2** (Lifelong learning)

Programme Outcomes (PO) (As given by NBA and ABET)

Pos	Cos
PO1: Engineering Knowledge **PO2: Problem Analysis** **PO3: Design/Development of Solutions** **PO4: Conduct Investigations of complex problemsPO5: Modern tools usage** **PO6: Engineer and Society** **PO7: Environment and Sustainability** **PO8: Ethics** **PO9: Individual & Teamwork** **PO10: Communication** **PO11: Project management & Finance** **PO12: Lifelong learning** **B.Tech. EEE Programme Specific Outcome (PSO)** **PSO1:** Awareness of Future Technology: Develop solutions for future systems using smart technologies. **PSO2:** Research and Innovation: Identify engineering challenges, approach using cutting edge research tools and execute innovative solutions.	**CO 1: Decolonizing Mind** **CO 2: Sustainability in thoughts** **CO 3: Understanding Human Personality** **CO 4: Applying Dharmic Framework** **CO 5: Expansion of Self** **CO 6: Integrating Lessons from History**

	E. CO-PO Mapping: [affinity#: 3 – high; 2- moderate; 1- slightly]												**Program Specific Ou [PSOs]***	
COs	**Program Outcomes [POs]**													
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO01	-	-	-	-	-	-	-	-	2	-	-	3	-	-
CO02	-	-	-	-	-	2	3	2	2	-	-	2	-	-
CO03	-	-	-	-	-	2	-	3	2	-	-	2	-	-
CO04	-	-	-	-	-	3	2	3	2	-	-	3	-	-
CO05	-	-	-	-	-	3	3	2	3	-	2	2	-	-
CO06	-	-	-	-	-	2	-	3	2	-	3	2	-	-
Total														
Average														

F. SYLLABUS

22ADM101 Foundations of Indian Heritage **[2-0-1-2]**

COURSE SYLLABUS

Chapter 1: Decolonisation
Chapter 2: Windows to the Universe: Indian Darshanas
Chapter 3: Ancient Wisdom for Modern Challenges: Pañcamahāyajña
Chapter 4: Epistemology of Indian Philosophies
Chapter 5: A Vedantic Modelling of Human Personality
Chapter 6: The Wake-Up Call from Upanishads
Chapter 7: Goals of Life
Chapter 8: The Six Ingredients of Success
Chapter 9: Making Sense of Dharma
Chapter 10: Ancestral Anchors: The Indian Family
Chapter 11: Decoding the Idea of India
Chapter 12: Nation Builders of Bharatvarsha
Chapter 13: Civilisational Bridges: India and the World

Textbooks:

Foundations of Indian Heritage

Reference Books:

G. Evaluation Pattern:

Evaluation Pattern for ASE, ASC, ASAS, ASPS, AI (Int : Ext = 60: 40)

M-T	CA	ES	Total
Mid Term Exam	Assignment (15) + Quiz/Class Test (15)	End Semester Examination	
30	30	40	100

Remarks

- CA refers to Continuous Assessment
- MT refers to Mid Term Examination
- ES refers to End Semester Examination

Total Marks = 100		
Internal (60)	**External (40)**	**Total (CA + MT + ES)**
CA = (30) Midterm (30)	E S = (40)	30 + 30 + 40 = 100

G. Evaluation Pattern Split up (Int: Ext = 60: 40)

M-T	CA		ES	Total
Mid Term Exam	Assignment	Quiz/Class Test	End Semester Examination	
30	15	15	40	100

Remarks

- CA refers to Continuous Assessment
- MT refers to mid-term Examination
- ES refers to End Semester Examination
- Activities may include any one of the following: assignments, presentations, or other suitable components based on the syllabus.

Total Marks = 100		
Internal (60)	**External (40)**	**Total (CA + ES)**
Midterm + CA = 30 + 30 = 60	ES = (40)	60 + 40 = 100

SEMESTER-1

UG SYLLABUS- Common for all Schools at all campuses

22AVP103	Mastery Over Mind	L-T-P-C-1-0-2-2

Course Objectives:

- Mastery Over Mind (MaOM) is an Amrita initiative to implement schemes and organize university- wide programs to enhance health and wellbeing of all faculty, staff, and students (UN SDG -3)
- It gives an introduction to immediate and long-term benefits of MA OM meditation and equips every attendee to manage stressful emotions and anxiety, in turn facilitating inner peace and harmony.
- This course will enhance the understanding of experiential learning based on the University's mission: "Education for Life along with Education for

Living" and is aimed to allow learners to realize and rediscover the infinite potential of one's true Being and the fulfilment of life's goals.

Course Outcomes:

After successful completion of the course, students will be able to:		
S.No.	**Course Outcomes**	**Knowledge level [Bloom's Taxonomy]**
1	Describe what meditation is and to understand its health benefits. (CO1)	L2 Understand
2	Understand the science of meditation. (CO2)	L2 Understand
3	To understand the causes of stress and how meditation improves well- being. (CO3)	L2 Understand
4	Learn and practice MAOM meditation in daily life. (CO4)	L3 Apply
5	Analyze how meditation improves communication and relationships. (CO5)	L4 Analyze
6	Apply the power of meditation to compassion-driven action. (CO6)	L3 Apply

CO-PO Mapping: [affinity#: 3 – high; 2- moderate; 1- slightly]

COs	Program Outcomes (PO)												Program Specific Outcomes (PSO)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
1	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
3	-	-	-	-	-	2	2	-	2	-	-	2	-	-	-	-
4	-	-	-	-	-	3	1	-	3	-	-	3	-	-	-	-
5	-	-	-	-	-	1	-	2	3	2	-	3	-	-	-	-
6	-	-	-	-	-	3	3	2	3	3	-	3	-	-	-	-

Syllabus

Unit 1: Describe Meditation and Understand its Benefits (CO1)

A: Importance of meditation. How does meditation help to overcome obstacles in life

Reading 1: Why Meditate? (Swami Shubamritananda ji)

Video Resource: Pre-recorded Video with Swami Shubhamritananda Puri

Unit 2: The Science of Meditation (CO2)

A: A preliminary understanding of the Science of meditation. What can modern science tell us about this tradition-based method?

B: How meditation helps humanity according to what we know from scientific research *Reading 1:* Does Meditation Aid Brain and Mental Health (Dr Shyam Diwakar)

Reading 2: 'Science and Spirituality.' Chapter 85 in Amritam Gamaya (2022). Mata Amritanandamayi Mission Trust.

Video Resource: Pre-recorded Video with Dr. Shyam Diwakar

Unit 3: Causes of Stress and How Meditation Improves Well-being (CO2,CO3)

A: Learn how to prepare for meditation. Understand the aids that can help in effectively practicing meditation. Understand the role of sleep, physical activity, and a balanced diet in supporting meditation. B: Causes of Stress. The problem of not being relaxed. Effects of stress on health. How meditation helps to relieve stress. Basics of stress management at home and the workplace.

Reading 1: Mayo Clinic Staff (2022, April 29). *Meditation: A Simple, Fast Way to Reduce Stress.* Mayo Clinic. https://www.mayoclinic.org/tests-procedures/meditation/in-depth/meditation/art- 20045858 (PDF provided)

Reading 2: 'Efficient Action.' Chapter 28 in *Amritam Gamaya* (2022). Mata Amritanandamayi Mission Trust.

Video Resource: Pre-recorded Video with Dr. Ram Manohar

Video Resource: Pre-recorded Video with Prof. Udhayakumar

Unit 4: Practicing MA OM Meditation in Daily Life (CO4)

Guided Meditation Sessions following scripts provided (Level One to Level Five)

Reading 1: MA OM and White Flower Meditation: A Brief Note (Swami Atmananda Puri) *Reading 2:* 'Live in the Present Moment.' Chapter 71 in *Amritam Gamaya* (2022). Mata Amritanandamayi Mission Trust.

Video Resource: Pre-recorded Video with Swami Atmananda Puri

Unit 5: Improving Communication and Relationships (CO5)

How meditation and mindfulness influence interpersonal communication. The role ofmeditation in improving relationship quality in the family, at the university and in theworkplace.

Reading 1: Seppala E (2022, June 30th) *5 Unexpected Ways Meditation Improves Relationships a Lot.* Psychology Today. https://www.psychologytoday.com/intl/blog/feeling-it/202206/5-unexpected-ways- meditation-improves-relationships-lot

Reading 2: 'Attitude.' Chapter 53 in *Amritam Gamaya* (2022). Mata AmritanandamayiMission Trust.

Video Resource: Pre-recorded Video with Dr. Shobhana Madhavan

Unit 6 Meditation and Compassion-driven Action (CO6)

Understand how meditation can help to motivate compassion-driven action. *(Pre-recorded video with Dr Shobhana Madhavan)*

Reading 1: Schindler, S., & Friese, M. (2022). The relation of mindfulness and prosocial behavior:What do we (not) know? *Current Opinion in Psychology*, *44*, 151-156.

Reading 2: 'Sympathy and Compassion.' Chapter 100 in *Amritam Gamaya* (2022). Mata Amritanandamyi Mission Trust.

Video Resource: Pre-recorded Video with Dr.Shobhana Madhavan

Course Assessment Specification Table:

		CO1	CO2	CO3	CO4	CO5	CO6	Total
1	**Individual Reflective Exercise/Journal**			10		10		20
2	**Class Participation**				40			40

	during meditation							
3	**Compassion in Action Project**						20	20
5	**End-Term**	2	3	5		5	5	20
	Total	2	3	15	40	15	25	100

Internal-60 marks

Reflective Essay/Journal (20 marks): (Individual student exercise)
Reflective Essay on Learning and Practicing Mindfulness and Meditation

Class Participation during Meditation session (40 marks):

- Attendance during meditation
- Quality of Class Participation (Level of engagement during the class)

External-40 marks

Compassion in Action Group Project (20 marks):
Compassion-in-Action Live Project. Student Groups can do any act of compassion within or outside campus. The project will comprise three parts:

- Idea: 2.5 marks
- Implementation and Presentation 12.5 marks
- Report: 5 marks (including photos)

Faculty can have flexibility in type of project and type of presentation. (Students can also present through role-play).

End-Term Exam (20 marks)
The aim of the exam is to test concepts covered in class.

SEMESTER 2
(FOUNDATION STUDIO)

25ARC111	**Foundation Design Studio – II**	L – T – P	2-4-16

Course Objectives

- To strengthen advanced skills in visual representation using both manual and digital tools.
- To develop precision and craftsmanship through hands-on model-making with diverse materials and techniques.
- To introduce students to fundamental design principles rooted in human perception, anthropometry and proportion.
- To cultivate cultural sensitivity and contextual awareness through tour-based architectural documentation.

- To develop an experiential understanding of human-scaled space by engaging with the design of built environments, and to introduce the basic concepts of materials, structure, and iterative design processes.
- To develop clarity in design thinking through writing and verbal articulation.

Course Outcomes

After completing this course, students will be able to:

CO1 : Generate accurate isometric, axonometric and perspective drawings and apply sciography and rendering techniques, including an introduction to digital representation tools.

CO2 : Construct detailed scaled models using materials like acrylic, wood, and glass, including sectional and presentation models and gain basic exposure to 3D printing technologies.

CO3 : Apply anthropometric data and perceptual understanding to spatial design and analyse the design philosophies of notable architects and designers.

CO4 : Document and interpret traditional built forms representing regional cultural heritage, demonstrating awareness of local materials, crafts and spatial practices.

CO5 : Design a built space relatable to human scale, while demonstrating an understanding of materiality, structural logic and the conceptual progression of the design process from idea to spatial articulation.

CO6 : Structure arguments, write design statements and present design intent clearly, both in written form and through effective verbal presentations.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	1	–	2	2	2	–	2	2	2	–	2	3	2
CO2	3	–	–	2	1	–	–	–	2	–	–	1	3	2
CO3	3	2	–	2	3	2	2	–	–	–	2	3	2	2
CO4	2	3	–	2	3	2	2	2	1	–	2	3	–	2
CO5	3	2	–	3	2	3	2	2	2	2	–	2	2	3
CO6	2	1	3	–	–	2	2	3	2	–	–	1	1	–

Module 1: Advanced Visual Representation

Isometric and axonometric views, perspective views, sciography, rendering techniques, drawing a building, introduction to digital tools for representation

Module 2: Model-making Workshop

Use of materials such as acrylic, wood, glass etc.; development of scaled models; presentation models; landscapes and interior details in models; sectional models; introduction to 3D printing

Module 3: Theory of Design

Human perception and spatial design; anthropometry; proportioning systems; concept of space-making; articulation of form and space; works of notable architects and designers.

Module 4: Tour Studies

Documentation of a traditional building symbolising the cultural heritage of a region; exposure to regional artistic, cultural and built traditions.

Module 5: Space Exploration

Understanding of human body in space; design of a built space of a size relatable to the human body; basic concepts of materials and structures in design; understanding of design process.

Module 6: Structured Analytical and Conceptual Writing

Structuring an argument, comparative writing, writing a design statement/intent, verbal presentation techniques

Reading Material

1. Alain de Botton, The Architecture of Happiness, Pantheon Books, 2006
2. *Francis D.K. Ching, Architectural Graphics, Sixth Edition, John Wiley & Sons, 2015*
3. *Yatin Pandya, Elements of Space Making, Mapin Publishing Pvt. Ltd., 2007*
4. *Francis D.K. Ching, Architecture - Form, Space, and Order, John Wiley & Sons, 1979*
5. *Gaston Bachelard, The Poetics of Space, Beacon Press, 1964*
6. *David W. Orr, The Nature of Design: Ecology, Culture, and Human Intention, Oxford University Press, 2002*
7. *Rudolf Arnheim, Visual Thinking, University of California Press, 1969*
8. *Kimberly Elam, Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press, 2001*
9. *Francis D.K. Ching & Steven P. Juroszek, Design Drawing, Second Edition, John Wiley & Sons, 2010*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

25ARC112	**Building Materials & Technology - I**	L – T – P	1 – 0 – 2

Course Objectives

- To introduce students to the basic elements of buildings, their functional and structural roles
- To familiarize students with construction drawing standards, conventions and representation techniques
- To introduce students to natural and manufactured building materials, their properties, applications, and selection criteria, with emphasis on contextual appropriateness and sustainability.

Course Outcomes

After completing this course, students will be able to:

CO1 : Identify and explain the functions of substructure and superstructure elements, distinguish between load-bearing and framed structural systems, and visually analyse real buildings from foundation to roof.

CO2 : Produce accurate measured drawings, apply standard drafting conventions and represent basic building elements and construction details using appropriate drawing techniques.

CO3 : Describe the properties and uses of common building materials, evaluate materials based on structural and environmental criteria, and suggest appropriate material choices based on context and sustainability.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	–	2	2	2	–	1	1	–	–	2	2	2
CO2	3	–	–	–	2	2	–	2	1	–	–	1	3	1
CO3	3	2	–	3	2	2	2	–	1	–	2	3	2	3

Module 1: Elements of Buildings

Substructure and superstructure components and their functions; introduction to structural paradigms – loadbearing and frame; study of buildings from foundation to roof through case studies and/or live site visits.

Module 2: Introduction to Building Construction Drawing Practices and Conventions
Introduction to standard conventions; measured drawing; study of building details; techniques of presenting construction drawings.

Module 3: Introduction to Building Materials
Natural and artificial materials and applications; contextual relevance; properties of materials; structural aspect; selection criteria of materials; introduction to sustainable materials; site/factory visits; hands-on workshop with materials; market survey of materials and creation of material library.

Reading Material

1. *Francis D.K. Ching, Building Construction Illustrated, John Wiley & Sons, 2020*
2. *Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997*
3. *Ross Spiegel & Dru Meadows, Green Building Materials: A Guide to Product Selection and Specification, John Wiley & Sons, Inc., 1999*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

25ARC113	**History & Culture – II**	L – T – P	2 – 0 – 0

Course Objectives

- To introduce students to the socio-cultural, religious, climatic, and political factors that influenced the development of architecture and urbanism in ancient river-valley civilizations
- To explore the historical, aesthetic and philosophical foundations of Classical Greek and Roman architecture.
- To develop an understanding of the cultural, cosmological and metaphysical foundations of Vedic architecture.

Course Outcomes

After completing this course, students will be able to:

CO1 : Analyse the architectural forms, planning strategies, and material practices of ancient river-valley civilizations by understanding their belief systems, social hierarchies, environmental contexts and technological capabilities.

CO2 : Identify and interpret the architectural features, construction systems and civic spaces of Classical Greece and Rome and evaluate their design philosophy and influence on later architectural movements.

CO3 : Explain the philosophical and symbolic basis of Vedic architecture, and analyse spatial

patterns, design principles, and sacred geometries used in early Indian architectural practices.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	–	2	2	3	2	–	1	–	2	3	–	2
CO2	3	2	–	–	2	3	–	–	1	–	2	2	–	1
CO3	3	3	–	2	2	3	2	–	1	–	2	3	–	2

Module 1: River-valley Civilizations
Study of socio-cultural, religious and political systems, people's beliefs, climate and other factors influencing the design of the built form of ancient river-valley civilizations along Nile, Tigirs, Euphrates and Sindhu.

Module 2: Classical Greece and Rome
Historical and cultural context; classical Greek and Roman architecture and design features; materials and techniques; aesthetics and design philosophy; global influence

Module 3: Vedic Period
Cultural and philosophical context; sacred geometry; spatial orientation and cosmology; early built forms and spatial patterns; design philosophy and symbolism

Reading Material

1. *Francis D.K. Ching, Mark Jarzombek, and Vikramaditya Prakash, A Global History of Architecture, John Wiley & Sons, 2007*
2. *Banister Fletcher, A History of Architecture, 1996*
3. *Ananda Coomaraswamy, The Dance of Siva, Gyan Publishing House (2023)*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

25ARC114	Structural Systems in Design - I	L – T – P	1 – 1 – 0

Course Objectives

- To develop an understanding of geometric, trigonometric, and mathematical principles—such as the Golden Ratio and fractal theory—as tools to inform design thinking and spatial organization.
- To explore the historical evolution of structural systems from ancient to industrial eras and understand their cultural, material, and technological influences.
- To introduce fundamental structural principles and forms while building intuitive understanding of how structures support loads and achieve stability.
- To familiarize students with structural systems, their components, and basic techniques of load analysis in architectural design.

Course Outcomes

After completing this course, students will be able to:

CO1 : Apply mathematical principles and patterns to enhance structural logic and aesthetic expression in design.

CO2 : Identify and analyse the development of structural systems and their contextual relevance across history.

CO3 : Understand and apply basic structural principles to evaluate the stability and logic of structural forms in design.

CO4 : Analyse the behaviour of structural components and load distribution in simple built forms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	–	2	3	2	–	–	2	2	–	2	3	3
CO2	3	3	–	2	2	3	–	–	1	–	–	2	2	2
CO3	3	2	–	3	3	2	–	–	2	–	2	2	3	3
CO4	3	1	–	3	3	2	–	–	1	–	2	2	3	3

Module 1: Mathematics in Design

Basic geometry in design; trigonometry in structural analysis; Golden ratio; Fractal theory

Module 2: Evolution of Structural Design

Evolution of structural systems from ancient to modern times − monolithic rock-cut forms, trabeated and arcuate construction methods, vaults, flying buttresses, tent structures, masted systems and bridges; Post-Industrial developments − modular construction techniques for large-span and suspension structures using steel and concrete.

Module 3: Structural Design Principles

Introduction to structural design; understanding structural forms and elements in architecture and design; types of loads; principles governing behaviour of external loads; understanding structural identity- why don't things fall down?

Module 4: Structural Components & Load Analysis

Structural systems; types and functions of structural components; types of loads; analysis of structural loads and their distribution

Reading Material

1. *Mario Salvadori, Why Buildings Stand Up: The Strength of Architecture, W. W. Norton & Company, 2002*

2. *J. E. Gordon, Structures: Or Why Things Don't Fall Down, Da Capo Press, 2003*
3. *Martin Walter, Mathematics for the Environment, Chapman and Hall, 2011*
4. *Mario Livio, The Golden Ratio: The Story of Phi, the World's Most Astonishing Number, Broadway Books, 2002*
5. *Mario Salvadori, Robert A. Heller & Deborah Oakley, Structure in Architecture: The Building of Buildings, Pearson, 2016*
6. *Matila Ghyka, The Geometry of Art and Life, Dover Publications, 1977*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

GLIMPSES OF GLORIOUS INDIA

2-0-1-2

22ADM111: GLIMPSES OF GLORIOUS INDIA

A. Prerequisite: nil

B. Nature of Course: Theory

C. Course Objectives:

- The course aims at introducing Bhārath and Bhāratīya Jñāna Paramparā (Indian Knowledge Systems) to the student, which includes the sources of Indian thoughts, eminent personalities who shaped various disciplines, Indian approach to science and technology and in overall India's significant contribution to the man kind as a whole.
- This course is designed to provide a multifaceted understanding of India's rich cultural heritage, encompassing historical insights, philosophical perspectives, and contemporary relevance. By delving into diverse chapters, this course aims to develop deep and profound insights into the intricate web of India's perspective and the knowledge systems that evolved here.
- Aligned with the Indian Knowledge Systems (IKS) framework outlined in the National Education Policy, this course serves as an introduction to the vast reservoir of wisdom and knowledge rooted in Indian heritage.

D. Course Outcomes:

After successful completion of the course, Students will be able to:

CO	Course Outcomes	Knowledge level [Bloom's Taxonomy]
CO01	**Recall key historical events, personalities, and philosophical concepts presented in the chapters on Indian heritage.** Statement: Demonstrate the ability to remember significant historical events, noteworthy individuals, and perspectives on reality, gender etc, discussed in the chapters on glorious India.	Remembering

CO02	**Explain the vision and mission of IKS, the teachings of Acharya Chanakya, Ashtanga Yoga, and the concepts of God and Iswara as foundational elements of Indian culture**. Statement: Understanding the vision and mission of IKS, Chanakya's teachings, spiritual concepts from Ashtanga Yoga, perspectives towards education and learning, gender, reality etc.	Understanding
CO03	**Apply lessons from the Bhagavad Gita to real-life scenarios, demonstrating the relevance of its teachings.** Statement: Utilize insights from the Bhagavad Gita to navigate challenges, transforming from a soldier to seeker on his//her journey. Applying the vision and mission of IKS to contribute to different fields a student pursues.	Applying
CO04	**Analyze the synthesis of yoga, spirituality, and life principles in Indian culture, as explored in the chapters on Bhagavad Gita and Lessons of Yoga, A glimpse into Yoga and Ashtanga Yoga** Statement: Deconstruct the integration of yoga and spiritual wisdom in Indian culture, examining how these principles enhance holistic well-being.	Analyzing
CO05	**Evaluate the existing Historiographical framework and expand on new horizons and the evaluation of the Indian Calendar System** Statement: Assess the existing Historiographical framework which overlooked several important aspects and suggest a new framework, evaluate the Indian Calendar System by treading the astronomical path and thoughts followed by the ancients.	Evaluating
CO06	**Develop projects that illustrate Indian contributions to the world, models of health and wellbeing, and the Indian approach to science.** Statement: Create innovative presentations or projects that showcase India's contribution in various fields of science and technology, and unique scientific perspectives inspired by Indian thought. Also, with emphasis to Ayurveda, re-create the models that promote health and wellbeing	Creating

*Programme Outcomes (PO) (As given by NBA and ABET)

POs	Cos
PO1: Engineering Knowledge PO2: Problem Analysis PO3: Design/Development of Solutions PO4: Conduct Investigations of complex problems PO5: Modern tools usage PO6: Engineer and Society PO7: Environment and Sustainability PO8: Ethics PO9: Individual & Teamwork	**CO01 Recall key historical events, personalities, and philosophical concepts presented in the chapters of 'Glimpses of Glorious India'.** **CO02 Explain the vision and mission of IKS, the teachings of Acharya Chanakya, Ashtanga Yoga, and the concepts of God and Iswara as foundational elements of Indian culture**. **CO03 Apply lessons from the Bhagavad Gita to real-life scenarios, demonstrating the relevance of its teachings.**

PO10: Communication PO11: Project management & Finance PO12: Lifelong learning *B.Tech. EEE Programme Specific Outcome (PSO) PSO1: Awareness of Future Technology: Develop solutions for future systems using smart technologies. PSO2: Research and Innovation: Identify engineering challenges, approach using cutting edge research tools and execute innovative solutions.	**CO04 Analyze the synthesis of yoga, spirituality, and life principles in Indian culture, as explored in the chapters on Bhagavad Gita and Lessons of Yoga, A glimpse into Yoga and Ashtanga Yoga** **CO05 Evaluate the existing Historiographical framework and expand on new horizons and the evaluation of the Indian Calendar System** **CO06 Develop projects that illustrate Indian contributions to the world, models of health and wellbeing, and the Indian approach to science.**

E. CO-PO Mapping: [affinity#: 3 – high; 2- moderate; 1- slightly]

COs	Program Outcomes [POs]												Program Specific Outcomes [PSOs]*		
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO01	-	-	-	-	-	3	-	1	-	-	-	2	-	-	-
CO02	-	-	-	-	-	2	-	3	1	-	-	2	-	-	-
CO03	-	-	-		-	2	1	2	1	-	-	3	-	-	-
CO04	-	-	-	-	-	2	-	1	-	-	-	2	-	-	-
CO05	-	-	-	-	-	3	-	-	2	1	1	2	-	-	-
CO06	-	-	-	-	-	2	3	-	-	1	1	2	-	-	-
Total															
Average															

F. SYLLABUS

22ADM111 GLIMPSES OF GLORIOUS INDIA [2-0-1-2]

COURSE SYLLABUS

Chapter 1: Vision and Mission of IKS
Chapter 2: Unveiling the roots of fear: pathways to Fearlessness
Chapter 3: Chanakya - Architect of a Greater India
Chapter 4: Bhagavad Gita - Soldier to Samsarin to Sadaka
Chapter 5: Lessons in Yoga from Bhagavad Gita
Chapter 6: Ultimate Reality: Different Perspectives
Chapter 7: Weaving a New Future Using Ancient Threads
Chapter 8: Legacy of knowledge and learning in India
Chapter 9: Ayurveda: Evolution and Relevance for Health and Well-Being
Chapter 10: Indian Calendar System
Chapter 11: In the Mirror of Culture: Understanding Gender
Chapter 12: Revisiting Indian Historiography
Chapter 13: A Glimpse into Yoga
Chapter 14: Ashtanga Yoga
Chapter 15: Illuminating Innovations: India's Contribution to Science and Technology
Chapter 16: Science and Spirituality

Textbooks:

GLIMPSES OF GLORIOUS INDIA

Reference Books:

G. Evaluation Pattern:

Evaluation Pattern for ASE, ASC, ASAS, ASPS, AI (Int : Ext = 60: 40)

M-T	CA	ES	Total
Mid Term Exam	Teaching Faculty –25 MaOM -5	End Semester Examination	
30	30	40	100

Remarks

- CA refers to Continuous Assessment
- MT refers to Mid Term Examination
- ES refers to End Semester Examination

Total Marks = 100

Internal (60)	External (40)	Total (CA + MT + ES)
CA = (30) Midterm (30)	E S = (40)	30 + 30 + 40 = 100

G. Evaluation Pattern Split up (Int: Ext = 60: 40)

M-T	CA	CA	ES	Total

		(Theory Faculty)			
Mid Term Exam	MaOM	Assignment	Class Test	End Semester Examination	
30	5	15	10	40	100

Remarks

- **CA** refers to Continuous Assessment.
- **MT** refers to Mid-term Examination.
- **ES** refers to the End Semester Examination.
- **Assignments** may include any one of the following: topic-based written submission, presentations, or rough book submission.
- **CA tasks** will be similar across batches within a department.
- **Class Test** will be a written exam for all batches within a department.
- **MT and ES** will be conducted online through AUMS.

Total Marks = 100

Internal (60)	External (40)	Total (CA + ES)
Midterm + MaOM + CA = 30 +5+25 = 60	ES = (40)	60 + 40 = 100

SEMESTER 3

25ARC201	**Architectural Design Studio – I**	L-T-P	2-4-16

Course Objectives

- To introduce students to climate-responsive architectural design and integrate environmental parameters into design thinking.
- To develop the ability to document, analyze, and interpret built environments through drawing, measurement, and observation.
- To sensitize students to the spatial, material, and cultural dynamics of rural and semi-urban settlements through field immersion and participatory design.
- To inculcate values of service (Seva), empathy, and ethical responsibility in architectural practice through community engagement.
- To foster writing and reflective thinking as tools for architectural inquiry, documentation, and critique.

Course Outcomes

After completing this course, students will be able to:

CO1: Design contextually responsive architectural solutions incorporating climate, culture and user needs.

CO2 : Analyze existing buildings and settlements through drawings, photographs, and written narratives.

CO3: Develop conceptually sound rural design interventions based on fieldwork, user interactions, and community needs.

CO4: Demonstrate empathy, ethical awareness, and responsibility in design decision-making through real-world applications.

CO5: Communicate design ideas effectively through verbal, visual and written mediums including narratives, reports, and sketches.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	1	-	-	1	2	-	3	1	-	2	2	-	-
CO2	3	2	-	-	1	-	-	3	1	-	3	3	-	-
CO3	3	1	3	2	2	3	-	-	-	1	3	-	2	3
CO4	2	-	3	-	-	3	-	3	1	2	-	-	-	3
CO5	3	2	2	-	1	3	-	2	3	2	-	-	-	-

Module 1: Climate & Architecture Theory
Introduction to climatic zones in India; passive design strategies: shading, ventilation, orientation; case studies of climate-responsive buildings

Module 2: Building Documentation
Measured drawing techniques; on-site study and documentation of rural/vernacular buildings; documentation techniques (photographic, drawings, material mapping, questionnaire survey); building analysis and conclusion/recommendations

Module 3: Rural Design Studio
Understanding socio-cultural dynamics of a rural context; identification of issues and design problem based on participatory methods; conceptual and schematic design through models and sketches; context-specific material, climate and technology applications; design development; presentation

Module 4: Seva and Community Engagement
Site immersion and Seva-based learning (participation in a local build/repair/clean-up effort); reflection on role of architects in social transformation.

Module 5: Architectural Writing and Reflection
Introduction to architectural writing formats: descriptive, analytical, narrative; writing about buildings, people, and places; critiquing one's own design work and peer feedback

Reading Material:

1. *V. Olgyay, Design with Climate, Princeton University Press, 1963.*
2. *Amos Rapoport. (1969). House Form and Culture. Prentice-Hall.*
3. *Laurie Baker. (1991). Architecture for the People.*
4. *Charles Correa. A Place in the Shade. Penguin Books.*
5. *Christopher Alexander. (1977). A Pattern Language. Oxford University Press.*
6. *Hassan Fathy. (1973). Architecture for the Poor. University of Chicago Press.*
7. *Arvind Krishan et al. Climate Responsive Architecture – A Design Handbook for Energy Efficient Buildings. TERI.*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

25ARC202	Building Materials & Technology - II	L-T-P	3-0-2

Course Objectives

- To introduce students to the properties, characteristics, and applications of timber and masonry as building materials in traditional and contemporary construction.
- To develop understanding of material behavior in structural and envelope systems, especially in rural and vernacular architecture.
- To equip students with the ability to analyze, draw, and detail construction methods involving timber joinery and masonry bonding.
- To link material knowledge with the building documentation work carried out in the parallel Architectural Design Studio.

Course Outcomes

After completing this course, students will be able to:

CO1: Evaluate the performance of timber and masonry materials in different building components and contexts.

CO2 : Document construction techniques of timber and masonry buildings through sketches, drawings and site studies.

CO3: Create detailed construction drawings and specifications based on site documentation and material understanding.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	3	2	2	-	2	2	-	2	-	2	-
CO2	3	-	2	-	-	3	2	2	2	-	3	-	3	-
CO3	3	2	2	2	2	3	2	2	3	2	-	1	2	-

Module 1: Timber as a Building Material

Types of timber – softwood, hardwood, engineered wood; Seasoning, treatment, defects and decay; Timber as structural and joinery material; Vernacular and modern use of timber

Module 2: Timber Construction Techniques

Traditional carpentry and joinery methods; Modern prefabricated systems (glulam, CLT); Timber roofs, floors, door/window frames; Structural detailing in timber; Hands-on Workshop

Module 3: Masonry Materials and Types

Brick, stone, compressed earth blocks, stabilized earth blocks; mortar types, proportions and workability; load-bearing and non-load bearing systems; sustainability and local sourcing

Module 4: Masonry Construction Techniques

Bonds: English, Flemish, Rat-trap; Arches, vaults, domes; Foundations and wall types; Construction details; other masonry materials

Reading Material

1. *Francis D.K. Ching, Building Construction Illustrated, John Wiley & Sons, Inc., 2020*

2. *Francis D. K. Ching, Materials for Design, John Wiley & Sons, Inc., 2014*
3. *Bindu G. & S. V. Deodhar, Construction Technology: Theory and Practice, I.K. International Pvt Ltd., 2014*
4. Elizabeth Baker, The Other Side of Laurie Baker, D.C. Books, 2007
5. Gernot Minke, Building with Earth: Design and Technology of a Sustainable Architecture,

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

25ARC203	**History & Culture – III**	L-T-P	2-0-0

Course Objectives

- To provide a comprehensive understanding of the evolution of architecture, art, and urbanism from Late Antiquity to early Modern periods, across Europe, West Asia, and India.
- To explore the socio-political, religious, philosophical, and technological contexts that shaped diverse architectural forms and aesthetic expressions.
- To critically examine the reciprocal influence of Eastern and Western architecture through colonization, conquests, and cultural exchange.
- To encourage comparative analysis and reflection on indigenous and global traditions in architecture and their relevance today.

Course Outcomes

After completing this course, students will be able to:

CO1: Identify key architectural movements, styles and periods in both Indian and global contexts, understanding their origins and characteristics.

CO2 : Analyze the socio-cultural and technological forces that shaped architectural expressions across different civilizations.

CO3: Evaluate the legacy and transformation of built heritage in response to religion, power, patronage, colonization and modernity.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	3	2	2	2	2	-	2	-	-
CO2	3	3	3	3	3	3	2	2	2	3	-	3	3	1
CO3	3	2	2	3	2	3	2	2	2	3	2	3	2	1

Module 1: Sacred Orders and Imperial Dreams

Indian timeline: Mahajanapadas → Mauryas & Guptas → Ashokan legacy; Rock-cut architecture, Hellenistic/Persian influences; Shaivite-Vaishnavite traditions and early temples

Western timeline: Fall of Roman Empire → Rise of Christianity → Holy Roman Empire; Early Christian & Byzantine Architecture; Romanesque, Gothic, Crusades and Islamic Influences

Module 2: Bhakti, Baroque and Renaissance Period

Indian timeline: Temple towns & temple forms (Nagara, Dravida, Vesara); Timber temples of Kerala & Himachal; Vijayanagara Empire & evolution of secular/state architecture
Western timeline: The Italian Renaissance and Humanism; Masters of the Renaissance: Brunelleschi, Michelangelo, Leonardo; Reformation & Counter-Reformation → Baroque

Module 3: Empires, Encounters & Exchanges
Indian timeline: Sultanates (Delhi, Gujarat, Deccan); Mughals: Babar to Aurangzeb – syncretic styles & Karkhanas; Rajput architecture and regional schools
Western timeline: The Age of Discovery, Colonization & Enlightenment; American & French Revolutions, Scientific Rationalism; Urban change and architectural reform

Module 4: Modernity, Movements & Memory
Indian timeline: Colonial port cities: Madras, Bombay, Calcutta; Neo-Classical, Neo-Gothic, Indo-Saracenic
Art Deco in Bombay, early Indian practices, modernism pre-1947
Western timeline: Industrial Revolution: new materials, new typologies; Neo-Classicism, Neo-Gothic, Arts & Crafts, Art Nouveau, Art Deco; Early modernism in architecture

Reading Material

1. *Banister Fletcher, A History of Architecture, 21st Edition, Bloomsbury Publishing, 2019*
2. *Spiro Kostof, A History of Architecture: Settings and Rituals, Revised Edition, Oxford University Press, 1995.*
3. *Satish Grover, The Architecture of India: Buddhist and Hindu, Vikas Publishing House, 1980.*
4. *Percy Brown, Indian Architecture: Islamic and Hindu Periods, 6th Edition, D. B. Taraporevala Sons & Co. Pvt. Ltd., 2013.*
5. *Christopher Tadgell, The History of Architecture in India, Revised Edition, Phaidon Press, 2002.*
6. *Kenneth Frampton, Modern Architecture: A Critical History, 5th Edition, Thames & Hudson, 2020.*
7. *Takeo Kamiya, Architecture of the Indian Subcontinent, [Online Resource], available at: http://www.indoarch.org*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

25ARC204	**Principles of Environmental Design**	L-T-P	2-0-0

Course Objectives

- To develop an understanding of the natural environment, ecology, ecosystems, biodiversity, and their relevance to architecture and human settlements.
- To analyze the impact of architecture on the environment with respect to the use of natural resources such as water, land, forests, minerals, and energy.
- To introduce students to the principles of climatology, micro/macro climate, and their role in determining human thermal comfort in buildings.
- To equip students with knowledge of passive design strategies and traditional environmental responses for achieving comfort through architecture.

Course Outcomes

After completing this course, students will be able to:

CO1 : Interpret the relationship between built and natural environments and the impact of architectural interventions on ecological systems.

CO2 : Apply basic climatological concepts, human comfort criteria and passive design techniques in architectural design decisions.

CO3 : Understand the relevance of traditional knowledge systems and sustainable practices in contemporary environmental design.

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	2	3	2	2	3	–	2	–	3	3	2	3
CO2	3	2	2	3	3	3	2	–	2	–	2	2	3	3
CO3	3	3	2	3	2	2	3	–	2	–	3	3	2	3

Module 1: Natural Environment, Ecology & Resources

Natural resources; concepts of ecosystems, biodiversity and balance; coexistence of natural and built environments; resource use in the built environment

Module 2: Climatology and Macro-Micro Climate

Global climate types and classification; macro and micro-climate; site planning for climate responsiveness; solar geometry; solar radiation; earth-sun relationship; energy flow in buildings – gain, loss and balance

Module 3: Human Comfort and Thermal Environment

Human thermal comfort and factors impacting it – temperature, humidity, air movement, radiation etc; bioclimatic chart and comfort zones; traditional methods for comfort across Indian regions; airflow patterns, orientation, layout of comfort

Module 4: Passive Design and Resource Conservation

Passive cooling, heating, daylighting and ventilation techniques; natural ventilation – stack, cross, induced; shading, orientation, insulation, thermal mass; conservation strategies – water harvesting, renewable energy, energy-efficient layouts.

Reading Material

1. *Koenigsberger, O.H., Ingersoll, T.G., Mayhew, A., Manual of Tropical Housing and Building, First Edition, Orient Blackswan, 1974.*
2. Givoni, B., Climate Considerations in Building and Urban Design, First Edition, Van Nostrand Reinhold (now Wiley), 1998.
3. Olgyay, Victor, Design with Climate: Bioclimatic Approach to Architectural Regionalism, Updated Edition, Princeton University Press, 2015 (original 1963).
4. Arvind Krishan, S.V. Szokolay, Shirish Beri, et al., Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings, Second Edition, TERI Press, 2017.
5. Edward Ng (Editor), Designing for Daylight, First Edition, Earthscan (Routledge), 2010.
6. UNEP, Reports on Sustainable Architecture and Natural Resource Use, Various Reports, United Nations Environment Programme, Latest Editions (Accessed 2025), www.unep.org.
7. TERI, CEPT University, IGBC, WRI, Building Science Articles and Reports on Sustainable Architecture, Various Publications

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%

LEADERSHIP LESSONS FROM RAMAYANA

1-0-0-1

22ADM211: LEADERSHIP LESSONS FROM RAMAYANA

A. Prerequisite: nil

B. Nature of Course: Theory

C. Course Objectives:

- To introduce students to the depths and richness of the Indian culture and knowledge traditions.
- Memorize and retrieve significant characters and events, demonstrating a foundational understanding of the Ramayana
- Through a study of the Rāmāyaṇa, the student should gain a deeper understanding of the ethical grandeur of Indian culture and be inspired to follow the ideals of the characters depicted therein.
- Aligned with the Indian Knowledge Systems (IKS) framework outlined in the National Education Policy, this course serves as an introduction to the vast reservoir of wisdom and knowledge rooted in Indian heritage.

D. Course Outcomes:

After successful completion of the course, Students will be able to:

CO	Course Outcomes	Knowledge level [Bloom's Taxonomy]

CO01	Recall key characters and events from the Ramayana. Statement: Memorize and retrieve significant characters and events, demonstrating a foundational understanding of the Ramayana narrative.	Remembering
CO02	Explain the ethical challenges faced by characters in the Ramayana and their repercussions. Statement: Comprehend the moral dilemmas encountered by Ramayana characters and articulate the effects of their decisions on the storyline	Understanding
CO03	Apply leadership principles from the Ramayana to real-life leadership situations. Statement: Utilize insights gleaned from the Ramayana to solve contemporary leadership predicaments, adapting its teachings to modern contexts.	Applying
CO04	Analyze the diverse leadership styles portrayed by characters in the Ramayana and their impacts. Statement: Examine the multifaceted leadership approaches of Ramayana's characters, assessing their effectiveness and unravelling the factors shaping their outcomes.	Analyzing
CO05	Evaluate the enduring relevance of Ramayana's leadership lessons in the present day. Statement: Assess the ongoing significance of the Ramayana's leadership wisdom, gauging its applicability and worth within contemporary leadership landscapes	Evaluating
CO06	Develop a comprehensive leadership framework by synthesizing lessons from the Ramayana. Statement: Formulate an innovative leadership model by integrating and reimagining the diverse teachings extracted from the Ramayana, fostering a novel approach to effective leadership.	Creating

*Programme Outcomes (PO) (As given by NBA and ABET)

POs	**COs**
PO1: Engineering Knowledge PO2: Problem Analysis PO3: Design/Development of Solutions PO4: Conduct Investigations of complex problems PO5: Modern tools usage PO6: Engineer and Society	CO1: Recall key characters and events from the Ramayana. CO2: Explain the ethical challenges faced by characters in the Ramayana and their repercussions. CO3: Apply leadership principles from the Ramayana to real-life leadership situations. CO4: Analyze the diverse leadership styles portrayed by characters in the Ramayana and their impacts.

PO7: Environment and Sustainability PO8: Ethics PO9: Individual & Teamwork PO10: Communication PO11: Project management & Finance PO12: Lifelong learning *B.Tech. EEE Programme Specific Outcome (PSO) PSO1: Awareness of Future Technology: Develop solutions for future systems using smart technologies. PSO2: Research and Innovation: Identify engineering challenges, approach using cutting edge research tools and execute innovative solutions.	CO5: Evaluate the enduring relevance of Ramayana's leadership lessons in preserving the environment and creating ecological awareness. CO6: Develop a comprehensive leadership framework by synthesizing lessons from the Ramayana.

E. CO-PO Mapping: [affinity#: 3 – high; 2- moderate; 1- slightly]

COs	Program Outcomes [POs]												Program Specific Outcomes [PSOs]*		
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO01	-	-	-	-	-	-	-	2	-	-	-	3	-	-	-
CO02	-	-	-	-	-	-	-	3	-	-	-	2	-	-	-
CO03	-	-	-	2	-	3	3	2	2	-	-	2	-	-	-
CO04	-	-	-	-	-	-	-	2	3	-	-	3	-	-	-
CO05	-	-	-	-	-	2	3	-	-	-	-	3	-	-	-
CO06	-	-	2	1	-	1	-	2	3	-	-	2	-	-	-
Total															
Average $															

F. SYLLABUS

22ADM211 LEADERSHIP LESSONS FROM RAMAYANA [1-0-0-1]

Course Syllabus

1	Introduction to Ramayana
2	A Concise Retelling of Ramayana (Part 1)
3	A Concise Retelling of Ramayana (Part 2)
4	A Concise Retelling of Ramayana (Part 3)
5	The Message of Ramayana
6	Becoming Sri Rama (Part 1)
7	Becoming Sri Rama (Part 2)
8	Principles of Ramayana
9	Legacy of Hanuman: Insights for Exceptional Leadership
10	Ramayana Parikramana - Through the Trails of Sitadevi
11	Sitadevi - An Enduring Tale of Love, Faith and Courage
12	**Decoding Dharma in Ramayana**
13	**The Rise & Fall of Ravana**
14	**Rajaneeti in Ayodhya**
15	**Footprints of Ramayana**
16	**Sri Rama - The Supreme Leader**

Textbooks:

LEADERSHIP LESSONS FROM RAMAYANA

Reference Books:

- Rajagopalachari. C, *The Ramayana*
- Valmiki, *The Ramayana*, Gita Press
- *Skanda Purana*
- *Hinduism and Ecology*

G. Evaluation Pattern:

G. Evaluation Pattern (Int: Ext = 60: 40)

IAM		CA (Theory Faculty)		ES	Total
Attendance	Practical Evaluation	Quiz	Activities Based on Syllabus	End Semester Examination	
5	10	25	20	40	100

Remarks

- CA refers to Continuous Assessment
- ES refers to End Semester Examination
- Activities may include any one of the following: assignments, or presentations, based on the syllabus.

Total Marks = 100

Internal (60)	External (40)	Total (CA + ES)

IAM + CA = 15 + 45 = 60	ES = (40)	60 + 40 = 100

SEMESTER 4

25ARC211	Architectural Design Studio – II	L-T-P	2-4-16

Course Objectives

- To build advanced skills in site planning and landscape integration through design interventions for rural and semi-urban contexts.
- To develop the ability to undertake survey research, field studies, and documentation of built and natural environments.
- To design community spaces and clusters responding to socio-cultural patterns, ecological contexts, and local lifestyles.
- To inculcate sensitivity towards climate-responsive, resource-efficient, and low-impact design using local materials and traditional practices.
- To enhance students' abilities in analytical writing, reflective thinking, and visual storytelling through design narratives and reports.

Course Outcomes

After completing this course, students will be able to:

CO1: Conduct site surveys, analysis, and case study documentation to inform site-specific design strategies.

CO2: Design land and building-based interventions for rural/semi-urban contexts, incorporating community needs and spatial equity.

CO3: Integrate principles of landscape design and ecological conservation in spatial planning.

CO4: Apply climate-responsive and low-energy design principles using local materials and vernacular knowledge.

CO5: Communicate design ideas effectively through drawings, physical models, writing, and oral presentations.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	3	2	2	3	2	3	1	-	1
CO2	3	3	2	3	2	3	3	3	2	3	2	-	2	3
CO3	3	2	2	3	2	3	2	2	2	3	1	-	-	-
CO4	3	3	2	3	2	2	3	2	2	3	-	2	2	-
CO5	3	2	2	2	2	3	2	3	3	3	-	-	-	-

Module 1: Site Analysis, Documentation & Research Methods

Survey techniques: topography, vegetation, access, orientation, hydrology; site inventory and mapping (manual and digital tools); case study methodology and comparative matrix; study of rural/semi-urban settlements and their evolution; socio-cultural mapping: user behavior, traditions, community

dynamics; tour studies and documentation presentations

Module 2: Site Planning & Landscape Design Theory
Principles of site zoning, land use distribution, circulation; Landscape elements: terrain, vegetation, water, shade, and wind flow; Built–unbuilt relationships, thresholds, edges, transitions; Water-sensitive design: drainage, harvesting, reuse; Landscape as narrative and memory: cultural, symbolic, and ecological meanings.

Module 3: Land & Building Design Studio
Site-responsive massing and clustering strategies; Design of community spaces: health, education, public gathering; Integration of infrastructure: sanitation, water supply, energy; Use of local materials, construction techniques, and spatial typologies; Design of built and unbuilt spaces as a cohesive system

Module 4: Writing, Communication & Reflection
Design narratives: writing about process, context, and intent; Visual documentation: diagrams, annotated drawings, collages; Reflective journals: learning from community, tradition, and site; Oral presentation skills and review preparation; Integration of writing with portfolio and report submissions

Reading Material

1. *Simon Swaffield, Theory in Landscape Architecture: A Reader, First Edition, University of Pennsylvania Press, 2002.*
2. *J.B. Jackson, Discovering the Vernacular Landscape, First Edition, Yale University Press, 1984.*
3. *Elizabeth Baker, The Other Side of Laurie Baker, First Edition, COSTFORD, 1991.*
4. *Amos Rapoport, House Form and Culture, First Edition, Prentice-Hall, 1969.*
5. *Brian Hackett, Landscape Design: A Historical Survey, First Edition, A & C Black Publishers, 1971.*
6. *Regional case studies from INTACH, HUDCO, WRI, and local development agencies*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

25ARC212	**Integrated Building Systems - I**	L-T-P	2-1-2

Course Objectives

- To introduce basic concepts and functional design of sanitation and water supply systems in buildings, including their connection to external municipal services.
- To develop competency in designing building-level drainage systems, including inspection chambers, manholes, and rainwater harvesting systems.
- To understand and design basic electrical supply and distribution systems, including safety components and internal wiring.
- To introduce students to lighting and acoustics as integrated building services, focusing on user comfort and performance standards.

Course Outcomes

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

CO1: Design integrated water supply and sanitation layouts for buildings, including storage and drainage systems.
CO2: Develop electrical layout plans with understanding of circuits, safety, and energy-efficient lighting.
CO3: Analyze the role of acoustics and artificial lighting in spatial performance and integrate appropriate strategies for comfort.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	-	-	-	1	2	-	-	-	-
CO2	3	2	3	3	2	-	-	-	1	2	-	-	-	-
CO3	3	2	3	3	2	-	-	-	1	2	1	-	2	-

Module 1: Water Supply and Sanitation
Types of sanitary appliances and user space requirements; Types of traps and fixtures used in plumbing; Systems: direct and indirect water supply; Municipal water connection: ferrule, water meter; Water storage tank sizing and down-take pipe design; Taps, valves, appliances – market study

Module 2: Building Drainage and External Sanitation Systems
Building drainage systems: inspection chamber, disconnecting chamber; Underground drainage: pipe gradients, sewer connection; Vent pipes, drop manholes, vent shafts; Site-level drainage and surface runoff
Rainwater harvesting systems; Sewage disposal for small projects

Module 3: Electricity and Electrical Layout
Basics: current types, single/three-phase supply; Site supply and distribution system; Internal distribution: open vs concealed wiring, wires and accessories; Layouts for interior spaces: lighting and power circuits; Safety: earthing, MCB, ELCB, lightning conductor

Module 4: Lighting and Acoustics

Lighting: direct/indirect, types of lamps (incandescent, CFL, LED), luminance levels; Daylight vs artificial light integration; Acoustics: key terminology, sound propagation; Reverberation, absorption, and reflection principles; Acoustical treatment for classrooms, lecture halls, and auditoriums

Reading Material

1. *P. C. Varghese, Building Services, First Edition, PHI Learning Pvt. Ltd., 2009.*
2. *R. G. Hopkinson and P. Petherbridge, Lighting for Architects, First Edition, Macmillan Press, 1966*
3. *Bureau of Indian Standards, National Building Code of India 2016, Volume 2: Building Services (Plumbing, Electrical, Lighting and Ventilation), Latest Edition, Bureau of Indian Standards, 2016*
4. *A. K. Jain, Environmental Design: An Introduction for Architects and Engineers, First Edition, Khanna Publishers, 2003*
5. *Housing & Urban Development Corporation (HUDCO) / HBC India, Manual on Water Supply and Treatment, 3rd Edition (Revised), Central Public Health and Environmental Engineering Organisation (CPHEEO), Ministry of Urban Development, Government of India, 1999.*
6. *V. N. Mittle, Electrical Wiring, Estimating & Costing, Revised Edition, Standard Publishers Distributors, 2012.*
7. *David M. Egan, Architectural Acoustics, Revised Edition, McGraw-Hill, 1988.*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC213	History & Culture - IV	L-T-P	2-0-0

Course Objectives

- To critically examine modern, postmodern, and contemporary art and architectural movements in relation to global and Indian contexts.
- To explore technological, philosophical, and cultural influences on architecture from the early 20th century to the present.
- To study the impacts of urbanization and globalization on built environments, societies, and public health in India and abroad.
- To sensitize students to issues of accessibility, heritage, public housing, and infrastructure in the context of rapid urban change.

Course Outcomes

After completing this course, students will be able to:

CO1: Interpret major art and architectural movements from the modern to the postmodern and contemporary periods, including their Indian parallels.

CO2: Analyze the influence of socio-political, cultural, and philosophical ideas on architectural practice and discourse.

CO3: Examine the challenges of urbanization and globalization on architecture, planning and public life.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	2	2	3	2	2	2	3	2	3	-	-
CO2	3	2	2	2	3	3	2	2	2	3	3	3	-	1
CO3	3	3	2	3	2	2	3	2	2	3	3	2	2	2

Module 1: Modern, Postmodern and Late-Modern Movements

Evolution of architecture between the World Wars and after Technological advancements and structural innovations; Modernist ideologies: Functionalism, Brutalism, International Style; Postmodernism and Late-Modern responses; Art movements: Abstract, Expressionism, Dadaism, Surrealism, Bauhaus

Module 2: Contemporary Critiques & Regional Responses

Critical Regionalism: Kenneth Frampton and global adaptations; Deconstruction and its expression in architecture; Art and architecture in the digital age (2000s onward); Environmental concerns, sustainability in contemporary design; Indian context: Vistara exhibition, validation of the vernacular

Module 3: Indian Architecture Post-Independence

Post-independence era and architecture for the State Influence of Le Corbusier and Louis Kahn; Indian Modernists: Achyut Kanvinde, Charles Correa, B.V. Doshi, Anant Raje; Contemporary Indian architectural trends and public projects; Cultural narratives and socio-political architecture

Module 4: Urbanization, Society & Built Heritage

Global trends and patterns of urbanization; Indian context: megacities, Tier 2 towns, and peri-urban development Migration, urban poverty, housing, infrastructure, public health Public space, gendered access, transport, and real estate; Preservation of natural, built, and cultural heritage

Reading Material

1. *Kenneth Frampton, Modern Architecture: A Critical History, 5th Edition, Thames & Hudson, 2020.*
2. *William J.R. Curtis, Modern Architecture Since 1900, 3rd Edition, Phaidon Press, 1996.*
3. *Jon Lang, A Concise History of Modern Architecture in India, First Edition, Permanent Black, 2002.*
4. *Peter Hall, Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century, 4th Edition, Wiley-Blackwell, 2014.*
5. *K.T. Ravindran (Editor), Traditional Architecture in India: A Reader, First Edition, Mapin Publishing, 2014.*
6. *Festival of India, Vistara: The Architecture of India – Exhibition Catalogue, First Edition, The Festival of India and the National Centre for the Performing Arts (NCPA), 1986.*
7. *A.G. Krishna Menon, Essays on Urban Heritage and Indian Urbanism, First Edition, INTACH & IHC (India Habitat Centre), 2018.*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Examination	Internal	20%
End-Semester Examination	External	50%

25ARC214	**Structural Systems in Design - II**	L-T-P	1-1-0

Course Objectives

- To enable students to understand and apply the theories of bending, shear, deflection, and stress analysis in structural elements.
- To familiarize students with the design principles of RCC and steel structures in low-rise building applications.
- To introduce students to material testing techniques and relate material behavior to structural design.
- To introduce the fundamentals of soil mechanics and foundation design, addressing the relationship between structure and site conditions.

Course Outcomes

After completing this course, students will be able to:

CO1: Analyze structural elements under different loading conditions using bending, deflection, and stress theories.

CO2: Apply structural design principles to timber, steel, and RCC components for small- scale buildings.

CO3: Evaluate material behavior and soil properties to inform decisions related to foundation design.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	3	2	2	2	2	-	-	2	-
CO2	3	2	3	3	2	3	2	2	2	2	-	-	2	-
CO3	3	2	2	3	2	3	2	2	2	2	1	-	2	-

Module 1: Structural Behavior and Design Basics
Theory of simple bending – equations and problems Design of timber and steel beams (basic); Shear stress distribution in rectangular sections; Deflection of beams: cantilever and simply supported beams; Euler's theory and introduction to Macaulay's method; Combined stresses: direct + bending (beam, column, footing); Footing plan design (dimensions only)

Module 2: RCC and Steel Design Fundamentals
RCC: grades of concrete and steel; Thumb rules for RCC slab, beam, column dimensions Steel reinforcement placement from BMD and SFD Introduction to steel sections: types and properties, planning of simple steel structures; Use of steel tables and codes (IS 456 & IS 800 - overview)

Module 3: Advanced Analysis Techniques
Short and long column analysis – Euler & Rankine Fixed beams: moment analysis for UDL and point loads; Moment distribution method: Continuous beams (2 & 3 spans), Single-storey, single-bay non-sway frames; Comparative study: simply supported, continuous, portal frame Structural idealization of 3D systems

Module 4: Soil Mechanics and Material Testing
Types of soil, compaction, consolidation, void ratio, etc.; Load-bearing capacity, water table, settlement, foundation failure; Design of simple load-bearing foundations; Soil testing methods and parameters; Material testing: cement, sand, bricks, coarse aggregate, concrete, Mangalore tiles.

Reading Material

1. *B.C. Punmia, Strength of Materials, 15th Edition, Laxmi Publications, 2017.*
2. *S. Ramamrutham, Design of Reinforced Concrete Structures, 17th Edition, Dhanpat Rai Publishing Company, 2015.*
3. *R.L. Jindal, Design of Steel Structures, 3rd Edition, Pearson Education India, 2012.*
4. *B.C. Punmia, Soil Mechanics and Foundations, 16th Edition, Laxmi Publications, 2017.*
5. *Bureau of Indian Standards, IS 456:2000 – Plain and Reinforced Concrete – Code of Practice, Latest Edition, Bureau of Indian Standards, 2000.*
6. *Bureau of Indian Standards, IS 800:2007 – General Construction in Steel – Code of Practice, Latest Edition, Bureau of Indian Standards, 2007.*
7. *Bureau of Indian Standards, National Building Code of India 2016 – Volume on Structural Design and Soils and Foundations, Latest Edition, Bureau of Indian Standards, 2016.*
8. *Various Authors, Laboratory Manuals for Structural and Soil Testing, Institutional Publications, Various Editions, Latest Accessed 2025.*

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Examination	Internal	20%
End-Semester Examination	External	50%

STRATEGIC LESSONS FROM MAHĀBHĀRATA
1-0-0-1
22ADM201: STRATEGIC LESSONS FROM MAHĀBHĀRATA
A. Prerequisite: nil
B. Nature of Course: Theory
C. Course Objectives:

- This course probes into the timeless itihasa of Mahabharata to uncover valuable insights on strategy, leadership, and decision-making.
- This course offers a captivating exploration of the itihasa, providing students with a comprehensive understanding of its historical and cultural significance, while drawing compelling parallels to modern-day business and life challenges.
- This course equips students with the essential tools to navigate complex situations, make informed choices, and achieve success.
- Aligned with the Indian Knowledge Systems (IKS) framework outlined in the National Education Policy, this course serves as an introduction to the vast reservoir of wisdom and knowledge rooted in Indian heritage.
- Whether you are interested in business, politics, or personal growth, this course offers invaluable wisdom that transcends time, making it an indispensable resource for anyone seeking to master the art of strategy and leadership.

D. Course Outcomes: After successful completion of the course, Students will be able to:

CO	Course Outcomes	Knowledge level [Bloom's Taxonomy]
CO01	Recall key events and characters from the Mahabharata. Statement: Demonstrate the ability to remember and recount significant events and characters from the Mahabharata, establishing a foundational understanding of the epic.	Remembering
CO02	Explain the strategic decisions made by characters in the Mahabharata and their implications. Statement: Comprehend the strategic choices made by characters in the Mahabharata and elucidate the consequences these decisions had on the unfolding of the narrative.	Understanding
CO03	Apply strategic principles from the Mahabharata to contemporary business scenarios. Statement: Utilize strategic insights derived from the Mahabharata to address modern business challenges, adapting historical lessons to current organizational contexts.	Applying
CO04	Analyze the diverse strategic approaches employed by characters in the Mahabharata. Statement: Dissect the multifaceted strategic tactics used by Mahabharata characters, evaluating their effectiveness and dissecting the factors influencing their outcomes.	Analyzing
CO05	Evaluate the enduring relevance of Mahabharata's strategic wisdom in present-day contexts. Statement: Assess the ongoing significance of strategic lessons from the Mahabharata, appraising their applicability and value within contemporary strategic decision-making processes.	Evaluating
CO06	Develop innovative strategic frameworks by synthesizing insights from the Mahabharata. Statement: Formulate original strategic models by amalgamating and reinterpreting the diverse strategic teachings extracted from the Mahabharata, fostering novel approaches to strategic thinking.	Creating

POs Programme Outcomes	**COs**

PO1: Engineering Knowledge
PO2: Problem Analysis
PO3: Design/Development of Solutions
PO4: Conduct Investigations of complex problems
PO5: Modern tools usage
PO6: Engineer and Society
PO7: Environment and Sustainability
PO8: Ethics
PO9: Individual & Teamwork
PO10: Communication
PO11: Project management & Finance
PO12: Lifelong learning

B.Tech. EEE Programme Specific Outcome (PSO)

PSO1:
Awareness of Future Technology: Develop solutions for future systems using smart technologies.

PSO2:
Research and Innovation: Identify engineering challenges, approach using cutting edge research tools and execute innovative solutions.

- **CO01 Recall key events and characters from the Mahabharata.**
- **CO02 Explain the strategic decisions made by characters in the Mahabharata and their implications.**
- **CO03 Apply strategic principles from the Mahabharata to contemporary business scenarios.**
- **CO04 Analyze the diverse strategic approaches employed by characters in the Mahabharata.**
- **CO05 Evaluate the enduring relevance of Mahabharata's strategic wisdom in present-day contexts.**
- **CO06 Develop innovative strategic frameworks by synthesizing insights from the Mahabharata.**

E. CO-PO Mapping: [affinity#: 3 – high; 2- moderate; 1- slightly]

COs	Program Outcomes [POs]												Program Specific Outcomes	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO01	-	-	-	-	-	-	-	2	-	-	-	3	-	-
CO02	-	-	-	-	-	2	2	2	2	-	-	2	-	-
CO03	-	-	2		-	2	-	-	2	-	3	3	-	-
CO04	-	-	-	-	-	2	-	-	3	2	-	2	-	-
CO05	-	2	2	-	2	3	3	3	2	-	-	3	-	-
CO06	-	2	2	-	-	3	3	2	2	-	-	2	-	-
Total														
Average														

F. SYLLABUS

22ADM201 STRATEGIC LESSONS FROM MAHĀBHĀRATA [1-0-0-1]

Course Syllabus

1. Chapter 1 A Preamble to the Grand Itihāsa
2. Chapter 2 Mahābhārata - A Brief Summary
3. Chapter 3 Mahābhārata: Whats and Whatnots
4. Chapter 4 Dharmic Insights of a Butcher
5. Chapter 5 Unbroken Legacy
6. Chapter 6 A Timeless Itihāsa for Timely Needs
7. Chapter 7 Pratijña
8. Chapter 8 Karna: The Maestro that Went Wide of the Mark
9. Chapter 9 Kingship and Polity Acumen
10. Chapter 10 Mahabharata in Adages
11. Chapter 11 Popular Regional Tales
12. Chapter 12 Strategical Silhouette of an Extraordinary Peace Mission
13. Chapter 13 Yajñaseni: A Woman from Fire
14. Chapter 14 Death and Deathlessness

15. Chapter 15 The Goal of Life

Textbooks: *STRATEGIC LESSONS FROM MAHĀBHĀRATA*

Reference Books:

1. ***The Mahabharata***, Translated by Bibek Debroy
2. ***The Mahabharata*** by C Rajagopalachari.
3. ***Mahabharata*** by Kamala Subramaniam.
4. ***Some Exemplary Characters of Mahabharata***, Book by Jayadayal Goyandka

G. Evaluation Pattern (Int : Ext = 60: 40)

IAM		CA (Theory Faculty)		ES	Total
Attendance	Practical Evaluation	Quiz	Activities Based on Syllabus	End Semester Examination	
5	10	25	20	40	100

Remarks

- CA refers to Continuous Assessment
- ES refers to End Semester Examination
- Activities may include any one of the following: assignments, presentations, or other suitable components based on the syllabus.

Total Marks = 100

Internal (60)	External (40)	Total (CA + ES)
IAM + CA = 15 + 45 = 60	ES = (40)	60 + 40 = 100

SEMESTER 5

25ARC301	**Architectural Design Studio – III**	L-T-P	2-4-16

Course Objectives

- To integrate the principles of sustainable architecture into design thinking, encompassing environmental, social, and economic dimensions.
- To document, analyze, and interpret built environments focusing on materiality, energy flows, and ecological relationships.
- To sensitize students to community needs through participatory engagement and translate these insights into practical design solutions.
- To foster Seva (service) as a core architectural value by immersing students in collaborative and socially beneficial design and build activities.
- To strengthen the skills of visual, verbal, and written communication for effective expression of architectural ideas and reflections.

Course Outcomes

After completing this course, students will be able to:

CO1: Analyze and integrate sustainable design strategies—including energy, water, and material efficiency—and evaluate architectural projects using green building rating systems.

CO2 : Conduct comprehensive documentation of settlements/buildings with a focus on material ecology, thermal comfort, and resource cycles.

CO3: Develop community-centered design interventions that are participatory, scalable, and sustainable.

CO4: Demonstrate ethical, empathetic, and service-oriented design thinking through real-world applications.

CO5: Critically reflect and articulate design processes through essays, reports, and visual narratives.

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	1	-	-	2	2	2	3	1	-	2	3	-	2

CO2	3	2	-	-	1	2	-	3	1	-	3	3	-	-
CO3	3	2	3	2	3	3	2	2	-	1	3	-	2	3
CO4	2	1	3	-	-	3	3	3	1	2	-	-	-	3
CO5	3	2	2	-	2	3	-	2	3	2	-	-	-	2

Module 1: Theory of Sustainable Architecture
Principles & Strategies for Sustainable Architecture; Green building standards and rating systems – rating systems such as LEED, GRIHA, IGBC, WELL, credit categories and case studies; Applications and emerging practices – net-zero energy buildings, biophilic designs, smart buildings.

Module 2: Building Documentation – Ecology & Materiality
Measured drawings of vernacular and eco-sensitive buildings; photo-documentation & material mapping: locally available materials, life-cycle impacts, embodied energy; Analysis of energy and water use in documented structures

Module 3: Sustainable Architecture Studio
Development of design proposal integrating green technologies, resource management and cultural context; Application of building simulation tools (basic daylight and thermal comfort analysis); application of sustainable design principles.

Module 4: Seva
On-ground Seva activity: Participation in construction, repair, or improvement of community assets (in collaboration with local NGOs/panchayats); Immersion in local cultural practices and their spatial manifestations; Reflecting on the role of architects in enabling social change.

Module 5: Architectural Writing & Reflection
Introduction to architectural writing: descriptive, analytical, and reflective; writing about people, places and buildings: narrative essays and critiques; peer-review and self-critique: evaluating one's own and peers' design processes

Reading Material

1. Olgyay, V. Design with Climate. Princeton University Press, 1963.
2. Laurie Baker. Architecture for the People. 1991.
3. Correa, C. A Place in the Shade. Penguin Books.
4. Fathy, H. Architecture for the Poor. University of Chicago Press, 1973.
5. Krishan, A. et al. Climate Responsive Architecture – A Design Handbook for Energy Efficient Buildings. TERI.
6. Yeang, K. Eco-Design: A Manual for Ecological Design. Wiley.

Evaluation Pattern

7.

Assessment	**Internal/External**	**Weightage**
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC302	**Architectural Working Drawing**	L-T-P	2-0-4

Course Objectives

- To introduce students to construction documentation practices for load-bearing and composite structural systems.
- To enable students to translate conceptual designs (from the previous semester) into comprehensive working drawings for construction.
- To familiarize students with building byelaws, standards, and codes relevant to working drawings.
- To develop technical communication skills through precise representation of plans, sections, elevations, details, and schedules.
- To cultivate an understanding of coordination between architectural, structural, and services drawings for practical execution.

Course Outcomes

After completing this course, students will be able to:

CO1: Prepare complete working drawing sets for load-bearing and composite structures.
CO2 : Apply building codes, byelaws, and standards to ensure technical accuracy and compliance.
CO3: Develop construction details for walls, foundations, openings, staircases, joinery, and roofing systems.
CO4: Demonstrate technical precision and clarity in producing drawings for execution on-site.
CO5: Coordinate architectural drawings with structural and basic service layouts.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	1	3	-	-	2	2	-	3	3	-	2
CO2	3	3	-	-	3	-	-	3	-	-	2	3	-	-
CO3	3	3	2	1	3	-	-	3	-	-	3	-	2	3
CO4	3	3	-	-	3	-	-	2	-	-	-	-	-	3
CO5	3	3	2	1	3	-	-	3	-	-	2	-	-	2

Module 1: Introduction to Working Drawings
Purpose and types of working drawings; Standards, symbols, scales, and conventions (IS codes); Introduction to load-bearing & composite structures (wall-thicknesses, structural grids, integration with frame elements);

Module 2: General Arrangement Drawings
Reworking Semester 4 design into a constructible load-bearing or composite structure; Setting out plans: column grids, wall positions, openings, levels; Working plan drawings with dimensions, annotations, levels.

Module 3: Sections, Elevations & Construction Details
Building sections: cut-through load-bearing walls, beams, and slabs; detailing lintels, sills, and foundations; Elevations: façade treatment with material specifications and external levels; Key construction details: Foundation & plinth for load-bearing walls, Wall-floor-roof junctions, Openings (doors, windows with lintels, sills, and jamb details), Composite roof details (sloped RCC slab/steel + tile/cladding).

Module 4: Joinery, Stairs & Toilet Details
Door & window joinery: exploded views, schedules, and fixing details; Staircase drawings: plan, section, and construction detailing; Toilet & wet-area detailing: layouts, waterproofing layers, slopes, fixture placements.

Module 5: Services Coordination & Site Drawings

Basic service layouts: water supply, drainage, and electrical points; Site plan: setting out, landscape elements, levels, and services connections.

Module 6: Portfolio Compilation
Integration of all drawings into a comprehensive working drawing set; Cross-checking for accuracy, readability, and constructability

Reading Material

1. W.B. McKay, *Building Construction* (Volumes 1–4).
2. Francis D.K. Ching, *Building Construction Illustrated*. Wiley.
3. Bindra & Arora, *Building Construction*. Dhanpat Rai.
4. Punmia, B.C. *Building Construction*. Laxmi Publications.
5. National Building Code of India (NBC).
6. IS 962: *Code of Practice for Architectural and Building Drawings*.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC303	**Structural Systems in Design - III**	L-T-P	1-1-0

Course Objectives
- To extend students' understanding of load-bearing and composite structural systems from earlier semesters and introduce reinforced concrete and hybrid systems in mid-rise buildings.
- To familiarize students with structural design considerations for spans, load paths, lateral stability, and material integration.
- To develop the ability to interpret structural drawings, specifications, and codes.
- To introduce basic structural calculations for sizing of key elements like slabs, beams, and columns.
- To integrate structural systems with architectural design, ensuring form–structure synergy.

Course Outcomes
After completing this course, students will be able to:

CO1: Identify and analyze the behavior of composite structural systems in medium-scale buildings.
CO2 : Interpret and prepare structural drawings in line with IS codes and integrate them with design intent.
CO3: Perform basic structural calculations for RCC slabs, beams, columns, and load distribution.
CO4: Integrate structural considerations into architectural design, ensuring stability, efficiency, and spatial quality.
CO5: Critically evaluate structural decisions in precedent projects and apply code-based knowledge to design.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	2	2	2	-	-	2	-	-	3	-	-
CO2	3	2	-	-	2	-	-	3	1	-	-	3	-	-
CO3	3	2	2	2	-	3	-	-	-	1	-	-	2	-

CO4	2	-	3	-	-	3	-	3	1	2	-	-	-	3
CO5	3	2	2	-	1	3	-	2	3	2	-	-	-	-

Module 1: Introduction to Composite & RCC Systems
Review of load-bearing and framed systems; Introduction to RCC systems: slabs, beams, columns, and footings; Composite structures: combining steel, timber, and RCC for efficiency;

Module 2: Load Path & Structural Behaviour
Vertical and lateral load transfer in mid-rise buildings; Behavior of slabs, beams, columns, and shear walls; Structural grids, span–depth ratios, and conceptual framing.

Module 3: RCC Design Fundamentals
Basic calculations for one-way and two-way slabs, beams, and short columns; Introduction to IS codes for RCC design (IS 456:2000); Sizing strategies and structural detailing for architectural integration.

Module 4: Structural Drawings & Detailing
Reading and interpreting structural drawings: plans, sections, reinforcement details; Detailing slabs, beams, columns, and foundations; Case study of structural drawings from a real project.

Module 5: Design Integration & Studio Application
Integrating structural systems into the students' ongoing design studio project; Evaluating structure-form synergy in selected case studies.

Reading Material

1. P.C. Varghese, *Limit State Design of Reinforced Concrete*, PHI Learning.
2. Krishna Raju, *Design of Reinforced Concrete Structures*, CBS Publishers.
3. N. Subramanian, *Design of Reinforced Concrete Structures*, Oxford University Press.
4. Francis D.K. Ching, *Building Structures Illustrated*, Wiley.
5. IS 456:2000 – Code of Practice for Plain and Reinforced Concrete.

Evaluation Pattern
9.

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Examination	Internal	20%
End-Semester Examination	External	50%

25ARC304	**Building Physics & Energy Modelling**	L-T-P	1-1-0

Course Objectives
- To introduce students to fundamental principles of building physics including heat transfer, moisture, acoustics and daylighting.
- To develop the ability to analyze energy performance of buildings using computational modelling tools.
- To familiarize students with thermal comfort indices, daylight factors, and energy efficiency metrics.
- To train students in using energy modelling software for basic performance analysis of buildings.
- To integrate building physics insights into design decision-making for sustainable architecture.

Course Outcomes

After completing this course, students will be able to:

CO1: Interpret heat, light, sound, and moisture phenomena in buildings and their implications on performance and comfort.
CO2 : Analyze thermal comfort conditions using psychrometric charts and adaptive comfort models.
CO3: Perform basic energy modelling for building envelope, daylighting and ventilation using simulation tools.
CO4: Evaluate energy efficiency strategies and propose design improvements for better performance.
CO5: Integrate simulation findings into design decisions, ensuring sustainable and user-responsive built environments.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	3	3	2	-	-	1	-	-	2	-	-
CO2	3	2	3	3	2	2	-	-	1	-	-	2	3	-
CO3	3	2	3	3	2	3	-	-	2	2	-	-	3	3
CO4	2	-	3	3	3	3	-	3	1	2	-	-	3	3
CO5	3	2	2	3	3	3	-	2	3	2	-	-	3	3

Module 1: Introduction to Building Physics

Principles of heat, light, sound, and moisture in the built environment; Understanding building envelopes and their role in performance; Energy flows in buildings: conduction, convection, radiation.

Module 2: Thermal Comfort & Energy Basics

Thermal comfort indices: PMV, PPD, adaptive comfort models; Psychrometric charts and human comfort analysis; Basic energy use in buildings: EUI, HVAC loads, passive vs. active strategies.

Module 3: Daylighting & Acoustics

Daylighting concepts: daylight factor, daylight autonomy, glare; Simple daylighting calculations for design; Basics of architectural acoustics: sound absorption, reverberation, noise control.

Module 4: Energy Modelling Tools & Applications

Introduction to energy modelling software (e.g., Climate Consultant, DesignBuilder, OpenStudio, Ladybug Tools); Modelling building envelope, shading, natural ventilation, and daylight performance; Generating energy analysis reports to inform design.

Module 5: Integration with Design Studio

Using building physics and simulation results to refine studio projects; Case studies of high-performance buildings in India and globally; Critical evaluation of design options based on performance data.

Reading Material

1. Szokolay, S.V. *Introduction to Architectural Science: The Basis of Sustainable Design*. Routledge.
2. Koenigsberger, O.H. *Manual of Tropical Housing and Building*. Orient Blackswan.
3. Arvind Krishan et al. *Climate Responsive Architecture*. TERI Press.
4. Givoni, B. *Climate Considerations in Building and Urban Design*. Wiley.
5. Reinhart, C. *Daylighting Handbook: Fundamentals and Designing with the Sun*. Solemma.
6. US DOE & NREL Manuals on EnergyPlus and OpenStudio.

Evaluation Pattern

10.

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

SEMESTER 6

25ARC311	**Architectural Design Studio - IV**	L-T-P	2-4-16

Course Objectives

- To introduce students to parametric and algorithmic thinking as a methodology for architectural design.
- To integrate digital tools (parametric modelling, environmental plugins, and fabrication techniques) into the design process.
- To foster critical evaluation of computational design through theory, case studies, and precedent analysis.
- To expose students to contemporary architecture through tour-based studies, analysing digital and complex form-making.
- To develop an advanced digital design project that addresses contextual, environmental, and performative parameters.

Course Outcomes

After completing this course, students will be able to:

CO1: Demonstrate theoretical understanding of parametric architecture, generative design and computational approaches.
CO2 : Apply digital tools (Grasshopper, Rhino, Revit Dynamo, etc.) to generate, iterate and evaluate architectural forms.
CO3: Conduct tour-based studies to critically analyse digitally-driven and performative architecture.
CO4: Develop a digitally conceived architectural design project integrating environmental, structural and user parameters.
CO5: Communicate complex design ideas using digital visualizations, fabrication outputs and analytical diagrams.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	-	2	2	-	2	2	-	-
CO2	3	2	3	3	2	3	-	3	3	-	2	2	3	3
CO3	3	3	2	2	2	3	-	2	3	-	2	3	-	3
CO4	3	3	3	3	3	3	2	3	3	2	3	3	3	3
CO5	3	2	2	3	3	3	-	3	3	3	2	3	3	3

Module 1: Parametric Architecture Theory

Evolution of digital and parametric design: from CAD to algorithmic design; Key theories: topological architecture, swarm intelligence, generative systems, biomimicry; Precedent studies: works of Zaha Hadid, Patrik Schumacher, Achim Menges, Michael Hansmeyer.

Module 2: Digital Tools in Design

Introduction to Grasshopper for Rhino: parametric geometry, data trees, attractor points; Environmental plugins: Ladybug, Honeybee (solar, daylight, thermal analysis); Basics of Revit Dynamo for parametric workflows; Introduction to digital fabrication techniques: 3D printing and laser cutting.

Module 3: Tour Studies

Documentation of contemporary parametric architecture (Indian/global projects); Analytical framework: form, performance, materiality, and digital processes; On-site study/tour: parametric

façades, computationally designed installations, etc.

Module 4: Digital Architecture Studio
Project brief: design a medium-scale public/institutional building using parametric methods; defining performance criteria: environmental, structural, spatial; Iteration workflows: digital form generation, evaluation, and optimization; Interdisciplinary integration: structure, services, sustainability, fabrication strategies.

Module 5: Documentation & Reflection
Writing design narratives for computational workflows; Reflection on advantages, limitations and ethics of digital architecture; Peer-review and design crits.

Reading Material

1. Schumacher, Patrik. *The Autopoiesis of Architecture, Vol. I & II*. Wiley.
2. Kolarevic, Branko. *Architecture in the Digital Age: Design and Manufacturing*. Taylor & Francis.
3. Menges, Achim & Ahlquist, Sean. *Computational Design Thinking*. Wiley.
4. Oxman, Rivka. *Theories of the Digital in Architecture*. Routledge.
5. Ching, Francis D.K. *Architectural Graphics* (for visual communication).
6. Tedeschi, Arturo. *AAD Algorithms-Aided Design*. Edizioni Le Penseur.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC312	**Integrated Building Systems - II**	L-T-P	2-1-2

Course Objectives
- To extend knowledge of plumbing and electrical systems learned in Integrated Building Systems – I to include HVAC, fire safety, vertical transportation and advanced lighting systems.
- To familiarize students with building automation and smart systems for energy efficiency.
- To develop the ability to integrate building services within architectural design through coordinated layouts and detailing.
- To provide an understanding of national and international codes for mechanical, electrical and fire systems (NBC, ASHRAE basics).
- To enable students to critically analyse and design building service layouts for medium- to large-scale projects.

Course Outcomes
After completing this course, students will be able to:

CO1: Explain the principles, components, and design criteria of HVAC, fire protection, and vertical transport systems in buildings.
CO2 : Develop coordinated service layouts integrating plumbing, electrical, HVAC, and fire systems with architectural plans.
CO3: Apply energy-efficient strategies through smart building technologies and sustainable MEP solutions.
CO4: Interpret and apply NBC and other relevant codes for mechanical, electrical, and fire protection design.

CO5: Communicate building services integration effectively through annotated drawings, diagrams, and coordinated models.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	-	-	2	1	-	-	-	2	-
CO2	3	2	3	3	3	-	-	3	2	-	-	-	3	2
CO3	3	2	3	3	3	3	-	3	2	2	-	-	3	3
CO4	3	2	2	3	3	3	-	3	2	2	-	-	3	3
CO5	3	2	2	3	3	3	-	3	3	2	-	-	3	3

Module 1: Heating, Ventilation & Air-Conditioning (HVAC) Systems
Principles of thermal comfort and air distribution; Natural vs. mechanical ventilation: strategies for hybrid systems; Components of HVAC systems: AHU, ducts, chillers, VRF, split, and packaged units; Duct design basics: sizing, routing, and integration with false ceilings; NBC provisions for HVAC and ventilation.

Module 2: Fire Detection & Fire Protection Systems
NBC fire safety provisions for buildings by occupancy and height; Active systems: sprinklers, fire hydrants, alarms, detection systems, wet/dry risers; Passive fire protection: fireproofing materials, compartmentalization, fire exits; Integration of fire systems in architectural layouts.

Module 3: Vertical Transportation
Types of elevators: passenger, freight, hospital, and service lifts; Escalators & moving walkways: applications and integration in public spaces; Planning lift shafts: dimensions, machine rooms, and safety considerations; NBC provisions for lifts and vertical transportation.

Module 4: Advanced Electrical & Lighting Systems
Smart building technologies: IoT in MEP systems, building automation; Lighting systems: task vs ambient lighting, automated controls, daylight-linked systems; Energy efficiency in electrical design: low-energy fixtures, LED retrofits; NBC and international guidelines for lighting and electrical safety.

Module 5: Integrated Services Coordination
Clash detection and coordination: plumbing, electrical, HVAC, and structural systems; Introduction to BIM for MEP coordination (Revit or similar); Case studies of integrated service design in institutional and commercial buildings.

Reading Material

1. P.C. Varghese, *Building Services.* PHI Learning.
2. K. N. Duggal, *Building Services.* New Age International.
3. A. K. Jain, *Environmental Design: An Introduction for Architects and Engineers*. Khanna Publishers.
4. David Egan, *Architectural Acoustics* (for acoustic principles linked to HVAC).
5. National Building Code of India, Vol. 2, Sections on Mechanical, Electrical, and Fire Safety.
6. ASHRAE Fundamentals Handbook (selected chapters for HVAC).

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC313	**Structural Systems in Design - IV**	L-T-P	1-1-0

Course Objectives

- To introduce long-span and tall building structural systems (space frames, shells, tensile structures, tubular and core systems).
- To develop the ability to evaluate structural efficiency for large-scale architectural projects.
- To familiarize students with structural considerations in high-rise and complex geometries.
- To understand integration of architecture, structure and building services for complex buildings.
- To enable students to interpret and apply advanced structural design concepts through analytical and representational exercises.

Course Outcomes

After completing this course, students will be able to:

CO1: Identify and explain the behaviour of long-span and tall building systems.

CO2 : Apply structural concepts for large-span roofs, tall building frames and irregular building forms.

CO3: Perform basic structural sizing for key components in space frames, shells and tall-building cores.

CO4: Integrate structural strategies into architectural design, balancing form, function and construction feasibility.

CO5: Critically analyse case studies of long-span/tall buildings for structural innovation and performance.

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	2	3	3	-	-	2	1	-	-	-	2	-
CO2	3	2	3	3	3	-	-	3	2	-	-	-	3	2
CO3	3	3	3	3	3	3	-	3	2	2	-	-	3	3
CO4	3	2	2	3	3	3	-	3	2	2	-	-	3	3
CO5	3	2	2	3	3	3	-	3	3	2	-	-	3	3

Module 1: Long-Span Structural Systems

Space frames: principles, applications, and detailing; Shell and folded plate structures: load distribution, curvature, and construction techniques; Tensile structures: cables, membranes and anchoring systems.

Module 2: Tall Building Structural Systems

Load paths in tall buildings: gravity and lateral load considerations; Framing systems: braced frames, shear walls, core-and-outrigger systems, tube and diagrid structures; Foundation considerations for high-rise buildings.

Module 3: Advanced Structural Concepts for Irregular & Complex Forms

Structural behavior of parametric and free-form geometries; Structural optimization techniques: form-finding, topology optimization; Integration of structure with digital design workflows (linking with the Design Studio).

Module 4: Integration of Structure with Architecture
Case studies of stadiums, airports, convention centers, and supertall towers; Strategies for integrating structure with building services and envelope; Architectural expression through structure: exoskeletons, diagrids, mega-columns.

Module 5: Applied Structural Design Exercise
Design development of a structural system for a selected large-scale building (linked to Studio project); Sketches, calculations, and models to communicate structural intent; Coordination with architectural form and program requirements.

Reading Material

1. Salvadori, Mario. *Why Buildings Stand Up: The Strength of Architecture*. Norton.
2. Schodek, Daniel. *Structures.* Prentice Hall.
3. Chilton, John. *Space Grid Structures*. Architectural Press.
4. Allen, Edward & Iano, Joseph. *Fundamentals of Building Construction*. Wiley.
5. Taranath, Bungale. *Structural Analysis and Design of Tall Buildings*. McGraw Hill.
6. National Building Code of India (NBC): Structural design provisions.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Examination	Internal	20%
End-Semester Examination	External	50%

25ARC314	**Advanced Building Construction**	L-T-P	1-1-0

Course Objectives
- To introduce students to emerging building materials and innovative construction technologies in contemporary architecture.
- To provide knowledge of industrialized construction methods such as prefabrication, modular construction and 3D printing.
- To understand the integration of advanced structural and envelope systems with building services and sustainability goals.
- To develop skills in detailing complex assemblies and translating them into working drawings and prototypes.
- To critically evaluate construction innovations through case studies of landmark projects.

Course Outcomes
After completing this course, students will be able to:
CO1: Identify and describe advanced materials and construction systems used in modern architecture.
CO2 : Prepare detailed construction drawings for innovative assemblies (façades, structural joints, modular units).
CO3: Integrate prefabricated and modular systems into building design while ensuring performance and sustainability.
CO4: Analyse and critique complex building systems through case studies and site visits.
CO5: Apply advanced construction techniques to their own design projects through models, drawings, and prototypes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	-	-	2	1	-	-	3	2	-
CO2	3	3	3	3	3	-	-	3	2	-	-	3	3	2
CO3	3	3	3	3	3	3	-	3	2	2	-	3	3	3
CO4	3	2	2	3	3	3	-	3	2	2	-	3	3	3
CO5	3	2	2	3	3	3	-	3	3	2	-	3	3	3

Module 1: Emerging Building Materials
High-performance concrete (HPC), self-compacting concrete, fiber-reinforced concrete; Engineered timber (CLT, glulam), composites, and advanced steel systems; Smart materials: phase-change materials, ETFE, electro-chromic glass, and aerogels.

Module 2: Advanced Structural & Envelope Systems
Curtain wall systems, double-skin façades, and kinetic façades; High-performance roofing: tensile membranes, ETFE cushions, and integrated solar roofs; Integration of façades with shading devices and building services.

Module 3: Prefabrication & Modular Construction
Off-site construction techniques: precast panels, volumetric modular units, and hybrid systems; Design and assembly of modular bathrooms, service pods, and façade panels; Logistics, transport, and installation strategies for prefabricated elements.

Module 4: 3D Printing & Digital Fabrication
Principles of additive manufacturing for buildings; Case studies of 3D-printed houses, bridges, and components; Introduction to CNC milling, laser cutting, and robotic fabrication.

Module 5: Case Studies & Integrated Applications
Case studies: Zaha Hadid Architects, BIG, Foster + Partners – advanced systems in practice; Site visits to projects using prefabrication or advanced façade technologies; Integration of advanced systems into students' own ongoing design studio projects.

Reading Material

1. Edward Allen & Joseph Iano, *Fundamentals of Building Construction: Materials and Methods*. Wiley.
2. Francis D.K. Ching, *Building Construction Illustrated*. Wiley.
3. Arthur Lyons, *Materials for Architects and Builders*. Routledge.
4. Kolarevic, Branko, *Architecture in the Digital Age: Design and Manufacturing*. Taylor & Francis.
5. National Building Code of India (NBC): Provisions for new materials & systems.
6. Recent journals & industry reports (CTBUH, ARUP, IJAC).

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

SEMESTER 7

25ARC498	Professional Training

Course Objectives

- To provide real-world exposure to architectural practice through structured training in a professional firm.
- To enable students to apply theoretical knowledge to practical design, documentation and site processes.
- To familiarize students with project workflows: from concept to construction, including coordination with consultants and clients.
- To build professional skills: communication, teamwork, and responsibility in a practice environment.
- To develop the ability to reflect on professional experience through documentation and critical analysis.

Course Outcomes

After completing this course, students will be able to:

CO1: Demonstrate practical knowledge of architectural design processes in a professional setup.

CO2 : Contribute to working drawings, BOQs, specifications and tender documentation under guidance.

CO3: Engage effectively in client meetings and consultant coordination for design development.

CO4: Conduct regular site visits and document construction progress, challenges, and learnings.

CO5: Critically reflect on their internship experience through a comprehensive training portfolio.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	3	3	-	-	2	1	-	3	3	3	-
CO2	3	3	3	3	3	-	-	3	2	-	3	3	3	2
CO3	3	3	3	3	3	3	-	3	2	2	3	3	3	3
CO4	3	3	2	3	3	3	-	3	2	2	3	3	3	3
CO5	3	2	2	3	3	3	-	3	3	2	3	3	3	3

Structure of Training

Duration: Minimum 16 weeks (full-time, 5–6 days/week).

Mentorship:

- External Mentor: Licensed Architect (by Council of Architecture, India) in the host firm (min. 10 years of professional experience).
- Internal Mentor: Faculty advisor to monitor progress and review.

Roles & Responsibilities of the Intern

Interns are expected to be actively involved in:

1. Design & Conceptual Development

- Assisting in preparing conceptual sketches, 3D models, and design iterations.
- Researching precedents and compiling design references.

2. Client & Consultant Coordination
   - Attending client meetings to understand project requirements.
   - Assisting in liaison with consultants: structural, MEP, interior, landscape, and contractors.
   - Preparing presentation drawings & reports for meetings.
3. Working Drawings & Documentation
   - Drafting architectural working drawings: plans, sections, elevations, details.
   - Assisting in preparation of BOQs, specifications, and tender documentation.
   - Understanding building by-laws and regulatory drawings.
4. Site Exposure
   - Conducting regular site visits with architects/engineers.
   - Documenting construction progress with notes and photographs.
   - Observing quality control, materials handling, and site coordination.
5. Project Management & Office Operations
   - Exposure to project scheduling, vendor interactions, and procurement processes.
   - Understanding professional ethics, contracts, and fee structures.

Deliverables during Internship

1. Daily Logbook:
   a. A record of tasks completed, meetings attended, site visits and key learnings (signed weekly by the office mentor).
2. Monthly Progress Reports:
   a. Submitted to the internal faculty mentor with summary of work completed and reflections.
3. Final Internship Portfolio:
   To be submitted at the end of training, including:
   a. Introduction to the firm: structure, specializations, notable projects.
   b. Detailed documentation of contributions: design iterations, drawings, BOQs, specifications, presentation decks.
   c. Site visit reports: with photos, sketches, and analysis.
   d. Reflections on client/consultant interactions: insights into teamwork and communication.
   e. Learning outcomes: technical, managerial, and professional growth.
4. Viva-Voce:
   a. Final evaluation based on portfolio and oral presentation to an internal jury.

Reading Material

1. Professional Practice, Roshan Namavati.
2. The Architect's Handbook of Professional Practice, AIA.
3. Construction Management and Contracting, Clough, Sears & Segner.
4. COA Guidelines for Architectural Internship.

Evaluation Pattern

5.

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	20%
End-Semester Jury	External	80%

SEMESTER 8

25ARC411	**Architectural Design Studio – V**	L-T-P	2-4-16

Course Objectives

- To provide a theoretical and practical understanding of housing, covering mass housing, mixed-income, and participatory models.
- To develop the ability to design medium- to large-scale housing projects, integrating social, cultural, and economic factors.
- To explore technological interventions in housing design, including modular systems, smart technologies, and sustainable materials.
- To foster collaborative design thinking with integration of structure, services, and construction methods.
- To encourage research-led design through precedent studies and contextual analysis.

Course Outcomes

After completing this course, students will be able to:

CO1: Demonstrate understanding of housing typologies, policies and theories relevant to the Indian and global context.

CO2 : Analyze site, user, and regulatory constraints to develop context-responsive housing solutions.

CO3: Design medium- to large-scale housing projects, integrating social, cultural, economic and environmental considerations.

CO4: Apply technological innovations (modular construction, smart housing systems, green infrastructure) to enhance livability.

CO5: Communicate housing design proposals effectively using drawings, models, digital tools, and narrative documentation.

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	2	3	3	3	3	2	1	-	2	3	-	-
CO2	3	3	3	3	3	3	3	3	2	-	2	3	3	3
CO3	3	3	3	3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	3	3	3	3	2	2	3	3	3	3
CO5	3	2	3	3	3	3	3	3	3	3	3	3	3	3

Module 1: Housing Theory & Precedents

History and evolution of housing: from vernacular clusters to mass housing; Typologies: low-rise, mid-rise, high-rise, row housing, co-housing, rental models; Policies & guidelines: PMAY, RAY, global affordable housing frameworks; Case studies: Indian & international housing projects (e.g., Aranya, Quinta Monroy, Savonnerie).

Module 2: Site & Contextual Analysis
Site reconnaissance: physical, socio-economic, and cultural mapping; Understanding user demographics, aspirations, and community needs; Development control regulations: FAR, setbacks, density norms, parking, fire safety.

Module 3: Housing Design Studio
Medium-to-large-scale housing development (50–200 units) incorporating mixed-use and community spaces with focus on flexibility, adaptability, design for social interaction, sustainability (passive design, water-sensitive urban design, green infrastructure); technology integration: modular/precast construction, smart home systems.

Module 4: Integration of Technology in Design
Prefabrication & modular construction for housing; Digital tools: BIM for housing design coordination; Smart housing solutions: IoT integration, energy monitoring, shared utilities.

Module 5: Final Documentation & Presentation
Compilation of the entire design process, from analysis to final proposal; Preparation of a comprehensive presentation portfolio (drawings, narratives, models); Jury presentation with external experts for evaluation.

Reading Material

1. K. M. Joshi, *Housing: A Factual Analysis*.
2. Christopher Alexander, *A Pattern Language*.
3. UN-Habitat, *Global Housing Strategy*.
4. Aranya Low-Cost Housing – Charles Correa.
5. Habraken, N. J., *Supports: An Alternative to Mass Housing*.
6. Lawrence Vale, *Designing for Diversity: Housing and Urban Development*.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC412	**Research in Architecture**	L-T-P	1-1-0

Course Objectives
- To introduce students to research as a structured process in architecture and allied disciplines.
- To develop skills for formulating research questions, hypotheses and objectives.
- To familiarize students with qualitative and quantitative research methods, tools and data collection techniques.
- To train students in literature review, referencing, and academic writing.

- To enable students to prepare a research proposal that can lead to a thesis, publication, or design research project.

Course Outcomes

After completing this course, students will be able to:

CO1: Understand and explain the role and types of research in architecture.
CO2 : Conduct literature reviews and develop clear research questions and objectives.
CO3: Select and apply appropriate research methodologies (qualitative, quantitative, mixed).
CO4: Analyze and interpret data using basic research tools (coding, thematic analysis, statistics).
CO5: Prepare and present a structured research proposal with clear methodology, timeline, and expected outcomes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	3	-	2	1	-	2	3	3	-
CO2	3	3	3	3	2	3	-	3	2	-	2	3	3	2
CO3	3	3	3	3	3	3	-	3	2	2	3	3	3	3
CO4	3	3	2	3	3	3	-	3	2	2	3	3	3	3
CO5	3	2	3	3	3	3	-	3	3	3	3	3	3	3

Module 1: Introduction to Research in Architecture

Definition, need, and scope of research in architecture; Types of research: applied, basic, exploratory, evaluative, design research; Understanding research ethics and integrity.

Module 2: Literature Review & Framing Research Questions

Conducting literature surveys: academic databases, journals, and archives; Critical reading and annotation techniques; Identifying research gaps; Formulating research questions, aims, and objectives.

Module 3: Research Design & Methodology

Qualitative methods: case studies, ethnography, interviews, focus groups; Quantitative methods: surveys, experimental research, basic statistics; Mixed methods: when and how to combine approaches; Sampling techniques, data collection tools (questionnaires, observation checklists).

Module 4: Data Analysis & Interpretation

Basics of data organization: coding qualitative data, tabulating quantitative data; Introduction to basics of software tools: NVivo (qualitative), Excel/SPSS (quantitative); Interpreting findings in relation to research objectives.

Module 5: Academic Writing & Proposal Development

Structuring a research paper: abstract, introduction, methodology, findings, conclusion; Citation and referencing styles (APA, Chicago); Writing a research proposal: objectives, rationale, methodology, timeline, expected outcomes.

Final Deliverables

- Annotated Literature Review (minimum 15 sources).
- Research Methodology Framework (aligned with topic).
- Pilot Study / Sample Data Analysis.

Reading Material

1. Groat, L. & Wang, D. *Architectural Research Methods*. Wiley.

2. Creswell, J. W. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. Sage.
3. Zeisel, J. *Inquiry by Design: Environment/Behavior/Neuroscience in Architecture*. W.W. Norton.
4. Denscombe, M. *The Good Research Guide*. Open University Press.
5. APA Manual (7th Edition) – for academic writing and referencing.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC413	**Architectural Project Management**	L-T-P	2-0-0

Course Objectives

- To introduce students to the principles, processes, and tools of project management in the context of architectural practice.
- To familiarize students with project life cycle stages: initiation, planning, execution, monitoring, and closure.
- To develop understanding of project scheduling, budgeting, resource management, and risk assessment.
- To provide knowledge of contract administration, legal frameworks, and stakeholder management.
- To enable students to apply project management strategies in academic design projects and professional practice.

Course Outcomes

After completing this course, students will be able to:

CO1: Explain the phases, processes, and stakeholders involved in architectural project management.

CO2 : Prepare project schedules, budgets, and resource allocation plans using standard tools.

CO3: Understand and apply procurement strategies, contract management, and legal considerations.

CO4: Assess and mitigate risks and ensure quality management in architectural projects.

CO5: Integrate project management strategies into architectural design and execution through case studies and simulated exercises.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	3	2	3	-	2	1	-	3	3	-	-
CO2	3	3	3	3	3	3	-	3	2	-	3	3	3	3
CO3	3	3	3	3	3	3	-	3	2	2	3	3	3	3
CO4	3	3	2	3	3	3	-	3	2	2	3	3	3	3
CO5	3	2	3	3	3	3	-	3	3	3	3	3	3	3

Module 1: Introduction to Project Management
Definition, scope, and importance of project management in architecture; Project life cycle: Initiation, Planning, Execution, Monitoring, and Closure; Roles of stakeholders: architect, client, consultants, contractors, and regulatory bodies.

Module 2: Project Planning & Scheduling
Work breakdown structure (WBS) and task sequencing; Project scheduling tools: Gantt charts, CPM, PERT; Introduction to software: MS Project, Primavera (basic exposure); Case study analysis of planning workflows in real projects

Module 3: Cost Estimation & Budgeting
Cost planning and estimation techniques: BOQ, cost per square meter, contingencies; Budget allocation and cash flow management; Case study of cost overruns and financial planning in a built project.

Module 4: Procurement, Contracts & Legal Framework
Types of contracts: item-rate, lump sum, design-build, EPC; Tendering process and bid evaluation; Basics of contract administration and dispute resolution; Overview of legal considerations: Building Codes, NBC and RERA.

Module 5: Risk, Quality & Resource Management
Risk identification and mitigation strategies; Quality assurance and control in design and construction stages; Human resource management in project teams.

Reading Material

1. Choudhury, S. *Project Management for Architects and Construction Managers*.
2. Jha, K. N. *Construction Project Management: Theory and Practice*. Pearson.
3. Project Management Institute. *PMBOK Guide* (Latest Edition).
4. Roshan Namavati. *Professional Practice*.
5. National Building Code (NBC) and RERA Guidelines.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Examination	Internal	20%
End-Semester Examination	External	50%

SEMESTER 9

25ARC501	**Architecture Design Studio – VI**	L-T-P	2-4-16

Course Objectives

- To introduce students to urban design theory and its role in shaping livable, resilient, and inclusive cities.
- To develop analytical and design skills for urban environments, ranging from streetscapes to district-scale interventions.
- To sensitize students to equity, inclusivity, and sustainability in urban design.
- To foster community engagement (Seva) by involving students in participatory processes with local stakeholders.
- To integrate urban infrastructure, landscape, and mobility strategies within urban design proposals.

Course Outcomes

After completing this course, students will be able to:

CO1: Demonstrate understanding of urban design principles, history, and theories in the Indian and global context.

CO2 : Analyze urban morphology, public spaces, mobility networks, and community needs through on-ground studies and mapping.

CO3: Develop design proposals for urban districts that are contextually rooted, inclusive, and environmentally responsive.

CO4: Engage in community-driven design (Seva) through participatory workshops and field engagement.

CO5: Communicate urban design ideas effectively using multi-scalar drawings, analytical diagrams, narratives, and models.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	3	2	1	-	2	3	-	-
CO2	3	3	3	3	3	3	3	3	2	-	2	3	3	3
CO3	3	3	3	3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	3	3	3	3	2	2	3	3	3	3
CO5	3	2	3	3	3	3	3	3	3	3	3	3	3	3

Module 1: Urban Design Theory

Introduction to urban design principles: imageability (Kevin Lynch), place-making, human scale, connectivity; History and evolution of urban design in India and globally; Theories & paradigms: Garden Cities, New Urbanism, Tactical Urbanism, Transit-Oriented Development (TOD); Precedent studies: Jan Gehl, William Whyte, Charles Correa, and Indian urban interventions.

Module 2: Urban Mapping & Contextual Analysis

On-site urban analysis: land use, circulation, built form, open spaces, infrastructure, socio-economic profiling; GIS-based mapping for layered understanding of urban conditions; Identifying problems and potentials in selected urban districts.

Module 3: Urban Design Studio

Project Brief: Design a district-level urban intervention (e.g., neighborhood revitalization, transit hub precinct, waterfront development or heritage district etc) with focus on multi-scalar design, public realm activation; mobility & accessibility: pedestrian-first streets, NMT networks, transit integration;

sustainability: water-sensitive urban design, green infrastructure; inclusive design: responding to diverse community needs.

Module 4: Seva – Participatory Urban Engagement
Community engagement workshops with local stakeholders (residents, shop owners, NGOs); Surveys & interviews to gather user inputs; Prototyping small-scale interventions (tactical urbanism pilots: pop-up plazas, wayfinding, street furniture).

Module 5: Final Documentation & Presentation
Portfolio compilation: design process, analysis, and final proposals; Preparation of urban design report: narrative, drawings, guidelines; Public presentation: presenting to stakeholders, faculty, and urban experts.

Reading Material

1. Kevin Lynch, *The Image of the City*. MIT Press.
2. Jan Gehl, *Cities for People*. Island Press.
3. Carmona et al., *Public Places – Urban Spaces*. Routledge.
4. Charles Correa, *A Place in the Shade*. Penguin.
5. William H. Whyte, *The Social Life of Small Urban Spaces*. Project for Public Spaces.
6. National Urban Design Guidelines – MoHUA, India.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC502	**Research Writing**	L-T-P	1-1-0

Course Objectives

- To train students in academic and professional research writing with a focus on architectural scholarship.
- To develop skills for structuring and drafting research papers for conferences and peer-reviewed journals.
- To provide exposure to publication ethics, peer review processes, and citation protocols.
- To enable students to refine their thesis or independent research into publishable outputs.
- To cultivate critical reading and analytical writing to engage with global academic discourse.

Course Outcomes

After completing this course, students will be able to:

CO1: Understand the formats, standards, and requirements for publishing in academic conferences and journals.
CO2 : Conduct a comprehensive literature review and position their research within existing scholarship.
CO3: Write structured academic papers (abstract, introduction, methodology, results, discussion, and conclusion).
CO4: Use appropriate referencing styles (APA/Chicago) and maintain academic integrity.

CO5: Prepare and submit a research paper for conference/journal publication, addressing peer-review feedback.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	-	2	1	-	3	3	-	-
CO2	3	3	3	3	3	3	-	3	2	-	3	3	3	3
CO3	3	3	3	3	3	3	-	3	3	2	3	3	3	3
CO4	3	3	2	3	3	3	-	3	2	2	3	3	3	3
CO5	3	3	3	3	3	3	-	3	3	3	3	3	3	3

Module 1: Introduction to Research Writing
Why publish? Purpose of research papers in architecture; Types of papers: conference, journal, review articles, short communications; Understanding target audiences and scope of journals

Module 2: Literature Review & Research Positioning
Conducting systematic literature reviews using databases (Scopus, JSTOR, Google Scholar); Gap analysis: identifying where the research fits; Building an annotated bibliography.

Module 3: Structuring an Academic Paper
IMRAD format: Introduction, Methods, Results, and Discussion; Writing compelling abstracts, introductions, and conclusions; Tables, figures, and visual communication in academic papers; Drafting methodology and findings from design or empirical research.

Module 4: Writing for Publication & Ethics
Citation styles: APA/Chicago/Harvard; Using Zotero/Mendeley for reference management; Plagiarism, self-plagiarism, and academic integrity; Understanding peer-review processes and responding to reviewer comments.

Module 5: Refinement & Submission
Editing and proofreading techniques for academic writing; Aligning with conference/journal submission guidelines; Preparing presentations for conference submission.

Reading Material

1. Groat, L. & Wang, D. *Architectural Research Methods*. Wiley.
2. Creswell, J. W. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. Sage.
3. Turabian, K. *Manual for Writers of Research Papers, Theses, and Dissertations*. Chicago University Press.
4. Day, R. *How to Write and Publish a Scientific Paper*. Cambridge University Press.
5. Publication Ethics Guidelines – COPE (Committee on Publication Ethics).

Final Deliverables
Complete Research Paper (3,000–4,000 words) in journal/conference format.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-Semester Jury	Internal	20%
End-Semester Jury	External	50%

25ARC503	**Design Entrepreneurship**	L – T – P	2 0 0

Course Objectives

- Develop an understanding of entrepreneurship in design, exploring business models, markets, and opportunities in the design industry.
- Learn strategic, financial, and operational aspects of setting up and managing a design practice or creative enterprise.
- Acquire skills in branding and digital marketing for design services and products.
- Build a comprehensive business plan or entrepreneurial project proposal as a capstone outcome to prepare for independent practice.

Course Outcomes

After completing this course, students will be able to:

CO1 : Demonstrate knowledge of entrepreneurial concepts, business models and legal frameworks for design enterprises.

CO2 : Apply financial planning, resource management, and operational strategies for design practice or creative start-ups.

CO3 : Develop and implement a branding and digital marketing strategy for a design enterprise.

CO4 : Create a comprehensive business plan or entrepreneurial project proposal aligned with industry opportunities.

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	3	2	2	2	3	2	3	–	3	2	3	3
CO2	3	2	3	3	3	2	2	2	3	–	3	2	3	3
CO3	3	2	3	3	3	2	3	3	3	–	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	–	3	3	3	3

Module 1: Introduction to Design Entrepreneurship

Entrepreneurship in the creative economy: opportunities in interior design; business models: sole proprietorship, partnerships, start-ups, and design collectives; understanding intellectual property rights and legal aspects for designers.

Module 2: Financial and Operational Strategies

Basics of financial planning, budgeting, and pricing for design services/products; funding options: self-funding, investors, grants, and design incubators; operations management: project workflows, human resources and procurement

Module 3: Branding and Digital Marketing

Personal and business branding: building a unique identity in the design market; digital marketing strategies: social media campaigns, SEO, content marketing, portfolio websites, influencer collaborations and paid advertising; case studies of successful design brands using digital platforms.

Module 4: Capstone – Business Plan Development

Researching market needs and identifying opportunities; preparing a business plan: vision, mission, objectives, financial projections and growth strategy; pitching the business plan: communication, storytelling and presentation skills

Reading Material

1. Brown, T. (2009). *Change by Design: How Design Thinking Creates New Alternatives for Business and Society*. Harper Business.

2. Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers.* John Wiley & Sons.
3. Ryan, D. (2016). *Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation*. Kogan Page.
4. Kelley, T., & Littman, J. (2005). *The Ten Faces of Innovation: IDEO's Strategies for Defeating the Devil's Advocate and Driving Creativity Throughout Your Organization*. Currency/Doubleday.
5. Kuratko, D. F. (2016). *Entrepreneurship: Theory, Process, and Practice*. Cengage Learning.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

SEMESTER 10

25ARC511	**Architectural Design Thesis**	L-T-P	2-4-20

Course Objectives

- To enable students to independently identify, frame, and address a complex architectural problem relevant to the built environment.
- To develop research-driven, contextually appropriate design responses grounded in theoretical and practical understanding.
- To refine skills in program formulation, advanced design development, technical integration, and project communication.
- To cultivate critical thinking, design leadership, and professional responsibility in solving real-world architectural challenges.
- To prepare students for professional practice or advanced research through a robust, portfolio-worthy design thesis.

Course Outcomes

After completing this course, students will be able to:

CO1: Identify and articulate a relevant architectural problem with a clear design intent and research basis.

CO2 : Conduct comprehensive research (contextual, technical, socio-cultural, and environmental) to inform design decisions.

CO3: Develop a comprehensive design program and translate it into an innovative, context-responsive design proposal.

CO4: Integrate structure, services, sustainability, and regulatory frameworks into the design.

CO5: Communicate the thesis process and outcomes effectively through professional-level drawings, models, narratives, and presentations.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	-	2	1	-	3	3	-	-
CO2	3	3	3	3	3	3	-	3	2	-	3	3	3	3
CO3	3	3	3	3	3	3	-	3	3	2	3	3	3	3
CO4	3	3	2	3	3	3	-	3	2	2	3	3	3	3
CO5	3	3	3	3	3	3	-	3	3	3	3	3	3	3

Module 1: Topic Identification & Synopsis

Identifying an architectural problem: socially relevant, innovative, and feasible in scope.
Defining the intent: rationale, aims, and objectives; Literature survey of precedents, theories, and context-specific case studies; Synopsis submission with clear research questions and expected outcomes.

Module 2: Research & Program Development

Primary & secondary data collection: site visits, stakeholder interviews, surveys; Context analysis: physical, social, cultural, economic, and environmental mapping; Program formulation: space requirements, adjacency matrix, design guidelines; Zoning & regulatory framework: understanding DCR/NBC/heritage bylaws (if applicable)

Module 3: Conceptual Design Development

Developing conceptual frameworks and design narratives; Massing and volumetric explorations: sketch models & digital studies; Spatial strategies responding to site, context, and programmatic needs

Module 4: Design Development & Technical Integration
Detailed spatial planning: refined layouts, circulation, and zoning; Structural & services integration: conceptual structural system, HVAC, MEP, fire safety; Sustainability strategies: passive/active systems, materials, energy efficiency; Regulatory compliance: NBC, accessibility, and safety considerations.

Module 5: Final Design Resolution
Fully resolved architectural design integrating aesthetics, functionality, and technology; 3D visualization: renderings, walkthroughs, VR (if applicable); Preparation of working-level details for critical components; final presentation, report+model preparation

Final Deliverables

- Synopsis with problem statement, aims, and objectives.
- Precedent studies & research documentation.
- Site & context analysis dossier.
- Design program & conceptual frameworks.
- Complete design drawings (site plan, floor plans, sections, elevations, details).
- Technical integration sheets (structure, services, sustainability).
- Physical/digital models & 3D visualizations.
- Thesis report (5,000–7,000 words) documenting the entire process.
- Comprehensive final presentation & defense.

Reading Material

1. Groat, L. & Wang, D. *Architectural Research Methods*. Wiley.
2. Creswell, J. W. *Research Design: Qualitative, Quantitative and Mixed Methods*. Sage.
3. Ching, F. D. K. *Architectural Graphics*. Wiley.
4. Neufert, E. *Architects' Data*. Wiley-Blackwell.
5. National Building Code of India – Relevant volumes.
6. Selected case studies & journals (AR, Domus, JAE, Indian Architect & Builder).

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term jury	Internal	20%
End-semester jury	External	50%

25ARC512	**Architectural Practice & Business Management**	L-T-P	2-0-0

Course Objectives

- To understand the legal framework of architectural practice in India, including the Architects Act of 1972, Council of Architecture regulations and the role of professional bodies.
- Analyze the professional responsibilities, duties and ethical code of conduct for architects, including intellectual property rights, copyright and competition guidelines.
- Gain insights into office structures, administration, and business management, exploring models for small, medium, and large practices, and types of firms (partnership, LLP, sole proprietorship, etc.).
- Develop knowledge of financial management, including taxation, project costing, billing, tenders, and contract administration for architectural projects.

- Acquire practical skills in dispute resolution and legal procedures, including arbitration, contract enforcement and termination of professional engagement.

Course Outcomes

After completing this course, students will be able to:

CO1: Interpret and apply the Architects Act (1972), COA guidelines, and codes of conduct to ensure ethical and lawful professional practice.

CO2 : Demonstrate an understanding of the architect's professional role, duties, and responsibilities in project execution and client interactions.

CO3: Organize and manage architectural practice effectively, including office setup, administration, team structures, and resource allocation.

CO4: Evaluate tenders, contracts, fee structures, and taxation strategies to ensure financially sound business operations.

CO5: Demonstrate knowledge of arbitration processes and legal tools for architectural practice in India.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	–	1	1	2	3	2	–	2	2	2	2	3
CO2	2	1	1	–	1	2	3	3	1	2	1	1	2	3
CO3	2	–	2	–	2	1	2	3	1	1	–	–	3	3
CO4	1	–	2	–	1	1	2	2	–	–	–	–	3	3
CO5	1	–	1	–	1	2	3	2	–	–	1	–	2	3

Module 1: Legal Framework and Professional Codes
Architects Act, 1972; Council of Architecture (COA); Code of Conduct; Code of Architectural Competitions; Role of Professional Bodies

Module 2: Office Management & Practice Structures
Architectural Practice Structures: Sole proprietorship, partnership, LLP, private limited companies; Office Setup & Administration: Infrastructure, HR policies, workflow, record-keeping; Organizational Structures: Models for small, medium, and large offices; Termination of Practice: Procedures and legal considerations.

Module 3: Financial Management & Taxation
Project Costing and Fee Structures: COA-recommended fee guidelines; Billing & Invoicing: Preparation and management; Taxation for Architects: GST, income tax, compliance; Tenders & Bids: Types of tenders, preparation, evaluation, and award processes.

Module 4: Contracts & Legal Responsibilities
Types of Contracts: Lump sum, percentage fee, turnkey, and design–build; Contract Documents: Preparation, execution, and obligations; Legal Liabilities: Breach of contract, negligence and professional indemnity.

Module 5: Arbitration & Dispute Resolution
Identifying Arbitration Process: Legal framework, appointment of arbitrators, proceedings; Mediation and Negotiation: Alternative dispute resolution methods; Case Studies: Analysis of real-world disputes in architectural practice.

Reading Material

1. Namavati, R. *Professional Practice*.
2. Roshan H. Namavati *Professional Practice for Architects and Quantity Surveyors*.
3. CoA Handbook – *Architects (Professional Conduct) Regulations*.
4. Project Management Institute. *PMBOK Guide*.
5. Osterwalder, A. & Pigneur, Y. *Business Model Generation*. Wiley.
6. Indian Contract Act & RERA Guidelines.

Evaluation Pattern

Assessment	Internal/External	Weightage
Continuous Assessment	Internal	30%
Mid-term examination	Internal	20%
End-semester examination	External	50%