FIFTH YEAR B. ARCH. - SEMESTER 10

BA21101S: Architectural Thesis

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ТМ	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Х	BA21101S	Architectural Thesis	4	14	18	SV	18	900	180	0	180	0	540

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has successfully completed (passed) and received passing grades in **"BA21091S Architectural Design VII"** course / subject of semester IX - Fifth year Architecture, **"BA21081S Professional Training"** course / subject of semester VIII - Fourth year Architecture and **"BA21094S Research Methodology Thesis Topic"** course / subject of semester IX - Fifth year Architecture.

Learning Objectives:

After successful completion of this course, student should be able to: Pursue an idea of research with depth of inquiry, criticality and logic and carry out an in-depth investigation of an area of architecture that he/she is interested in.

Detailed Syllabus:

1 To 14	Thesis project is the culmination of the Undergraduate program in architecture. In thesis a student is expected to undertake an in-depth investigation of an area of architecture that he/she is interested in. These will be done with the help of a faculty guide. Two options offered in Semester 9 under the course Research Methodology Thesis Topic will be considered and one will be taken up as final design thesis project. The chosen project should demonstrate a student's ability to work independently, decide what is important to him/her and schedule oneself to adhere to a time frame. Projects will be chosen within the following parameters: Project should have the potential for a valid relationship between Architecture and the city/environment; have the potential to probe issues of cultural continuity and the language of the present in the Indian context, reinterpreting tradition anew into contemporary statement. Be of approx. 3,000 to 5,000 sq. Mts. of built up area (not too large in scale because the project must be developed to design details and not too small to lack potential of requisite design complexities). If the project is larger, it should be
	tradition anew into contemporary statement. Be of approx. 3,000 to 5,000 sq. Mts. of built up area (not too large in scale because the project must be developed to design details and not too small to lack potential of requisite design complexities). If the project is larger, it should be
	possible to develop a part of it to required detail in consultation with faculty. Be real, but not necessarily a live project, and must have the potential to demonstrate ones strengths in terms of scope – capacity of the project.

1.	Robert SommerDesign Awareness.
2.	C.M. Deasy -Design for Human Affairs.
3.	Pierre Von Meiss -Elements of Architecture from form to place.
4.	Yatin Pandya- Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf, Visual Thinking.
10.	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
11.	William J.J. Synectics: The Development of Creative Capacity
12.	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
13.	Jyoce, Bruce and Weil Marsha .Synetics Involving creative thought

BA21102T: Legal Aspects of Architecture

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ТМ	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
х	BA21102T	Legal Aspects of Architecture	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

In performing professional duties as an Architect we have to take cognizance of various Acts. We must ensure that all the rules and regulations are strictly followed in the solutions – designs and services we offer. Many times we also need to advice the client on various issues. In order to be correct in our actions, we have to be generally aware of these Acts and study certain provisions of these acts that are connected with actions and advice we offer. On completion of this course, the students will be able to understand the importance of studying the relevant provisions and sections of these Acts.

Detailed Syllabus:

1.	Maharashtra Land Revenue Code - sections on conversion Agriculture to Non Agriculture Use of land, etc. Transfer of Property, Easements Act. Relevant sections of Maharashtra Factories Act & Rules, Maharashtra Prevention & Control of Pollution Act & Rules, Maharashtra Fire Act & Rules.
2.	Environment Protection Act – Coastal Zone Regulations of Central Government & Maharashtra Government. Arbitration & conciliation Act – sections relevant to settlement of disputes. Real Estate Regulatory authority Act (RERA) & MahaRERA Act – sections relevant to Architects role & responsibilities. Consumer Protection act.

1.	Law Relating to Intellectual Property Rights by Virendra Kumar Ahuja
2.	The Maharashtra Land Revenue Code, 1966 by Sunil Dighe
3.	The Factories Act, 1948 (with the Maharashtra Factories Rules, 1963) by S.D. Puri
4.	Law & Practice of Alternative Dispute Resolution in India by Anirban Chakraborty
5.	Environment (Protection) Act, 1986 by Lawmann's
6.	A hand book of Environmental protection act: Environmental protection act by Dr. Hemant Pathak
7.	The Real Estate (Regulation And Development) Act, 2016
8.	Architects act 1972 by Council of Architecture

BA21103S: Project Management

Course Information:

Sem.	Code	Course	L	S	Т	СТ	Cr	ΤM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
х	BA21103S	Project Management	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:

Get an introduction to the competencies and skills for planning and controlling projects and understanding interpersonal issues that drive successful project outcomes. This course guides students through the fundamental project management tools and behavioral skills necessary.

Detailed Syllabus:

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1	Basics of Project Management: Introduction, Need for Project Management, Project Management Knowledge Areas
1.	and Processes, The Project Life Cycle, The Project Manager (PM), Phases of Project Management Life Cycle, Project
	Management Processes, Impact of Delays in Project Completions, Essentials of Project Management Philosophy,
	Project Management Principles.
2	Project Identification and Selection: Introduction, Project Identification Process, Project Initiation, Pre-Feasibility
Ζ.	Study, Feasibility Studies, Project Break-even point. Project Planning: Introduction, Project Planning, Need of Project
	Planning, Project Life Cycle, Roles, Responsibility and Team Work, Project Planning Process, Work Breakdown
	Structure (WBS). PERT and CPM: Introduction, Development of Project Network, Time Estimation, Determination of
	the Critical Path, PERT Model, Measures of variability, CPM Model, Network Cost System.

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by Mckay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell
8.	Construction Project Management - K.K. Chitkara
9.	Construction Management - P.K Joy.
10.	Techniques in Planning and controlling construction projects Hira N. Ahuja
11.	Projects Planning by Prasanna Chandra
12.	Construction Engineering & Management by Girija K. IIT Delhi

BA21104S: Green Buildings & Rating System

Course Information:

Sem.	Code	Course	L	S	T/w	СТ	Cr	ТМ	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Х	BA21104S	Green Buildings & Rating System	4	0	4	STW	4	200	40	0	40	0	120

Learning Objectives:

After successful completion of this course, student should be able to:

Understand concept of Green design or Sustainable design is the 'creation of buildings which are energy-efficient healthy, comfortable, flexible in use and designed for long life'. Green design should have a minimal impact on the environment, both in terms of products and materials used in the construction but in the functionality of the building.

Detailed Syllabus:

1.	Understanding concept of Green design or Sustainable design. Energy-efficiency. Minimal impact on the environment, both in terms of products and materials used in the construction but in the functionality of the building.
2.	Conceptual problems Diminishing returns, Unsustainable investment, Waste prevention, Negative Effects of Waste, Waste prevention strategies, Loss of Biodiversity.
3.	Understanding principles of Green Design like: Low-impact materials, Energy efficiency, emotionally durable design, Design for reuse and recycling, Targeted durability, not immortality, should be a design goal, Material diversity in multicomponent products.
4.	Design impact measures for total carbon footprint and life-cycle assessment for any resource, Sustainable design standards and project design guides, Bio mimicry - "redesigning industrial systems on biological lines, Service substitution - shifting the mode of consumption from personal ownership of products to provision of services, Renewable resource, Robust eco-design.
5.	A brief introduction to various rating systems prevalent like GRIHA, LEED (India), BCA Green Mark Scheme (Singapore), Beam (Hong Kong), BREEAM (Eu, UK), CASBEE (Japan), Green Star (South Africa), Pearl Rating Systems for Estidama (UAE), etc.

1.	GRIHA; Griha Manual, Vol 1 to 5, TERI Publication
2.	IGBC Manuals, CII Publication
3.	LEED Manuals
4.	ECBC Manual
5.	ECBC User Manual
6.	Whole building life cycle assessment by Frances Yang
7.	Textbook of Environmental Studies by Erach Bharucha

BA21105S: Electives – XII (A) New Media Design

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	Т	СТ	Cr	ТМ	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Х	BA21105S	Electives – XII (A)New Media Design	2	0	2	STW	2	100	20	0	20	0	60
	(A)												

Learning Objectives:

After successful completion of this course, students will learn the fundamental principles, techniques and technologies of visual communication and become familiarized with the tools and processes necessary to execute graphic design projects from concept to production.

Detailed Syllabus:

1.	Principles of Digital Communications :-
	Make strategic use of technology tools for academic purposes
	 Find and evaluate information online, connect and collaborate with others
	 Develop critical thinking about media consumption and creation, and ethical use of technology
	 Recognize different media formats, resolution and outputs
	 Demonstrate fundamental concepts of photography and videography
	 Demonstrate fundamental concepts of composition as they relate to visual communications
2.	Design Basics :-
	 Demonstrate knowledge of the basic principles and elements of graphic design
	Become familiar with graphic design terminology
	 Understand and implement the design process in problem solving
	 Successfully combine text and symbols to express meaning and convey information
	 Produce graphic design solutions targeted to a specific message, audience and format
	 Develop fundamental drawing skills to create thumbnails, roughs, and comps
	 Recognize and evaluate graphic design work through group analysis discussions and critiques
3.	Digital Imaging :-
	 Acquire and demonstrate knowledge of Illustrator, Photoshop and InDesign
	 Develop a personal sense of aesthetics through visual thinking
	Create, edit and post-process digital images
	 Demonstrate advanced knowledge of design elements and apply them to solve design problems
	 Develop critical introspection of visual work through group discussion and critiques
	 Plan and develop a project in which they explore new and emerging technologies in the industry
	Define a personal brand and professional identity and produce a portfolio website

1.	Design Fundamentals for New Media by James Gordon Bennett
2.	Principles of digital communication by Robert G. Gallager
3.	Graphic Design for Architects: A Manual for Visual Communication by Karen Lewis
4.	Screen: Essays on Graphic Design, New Media, and Visual Culture by Jessica Helfland, John Maeda
5.	New Media Design by Tricia Austin, Richard Doust

BA21105S: Electives – XII (B) Artificial Intelligence in Architecture

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	Т	СТ	Cr	ΤM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
х	BA21105S (B)	Electives – XII (B) Artificial Intelligence in Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course:

Students understand the basic introductory applications of Artificial Intelligence in Architectural Design and fabrication of various components.

Detailed Syllabus:

1.	Introduction to Artificial intelligence in architecture. Digital Buildings.
2.	Introduction to Hybrid creativity in architecture, Collaborative robotic platform, Machine learning system of
	streamlining external aesthetic and cultural influences in architecture, Generative architectural form finding and
	fabrication, Interactive intelligence. Smart building technologies with data analytic.

1.	Architecture in Age of AI by Ar. Neil Leach
2.	Architectural Intelligence by Ar. Neil Leach
3.	The Routledge Companion to AI by Imdat

BA21106S: Electives – XIII (A) Sustainable Cities & Communities

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	Т	СТ	Cr	ТМ	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Х	BA21106S	Electives – XIII (B) Sustainable Cities	2	0	2	STW	2	100	20	0	20	0	60
	(A)	& Communities											

Learning Objectives:

After successful completion of this course, students will understand various issues like climate change, resource depletion etc., concept of sustainability and sustainable development, low impact construction practices, life cycle costs and alternative energy resources.

Detailed Syllabus:

1.	Current scenario of development and its impacts, concepts- such as ecology, climate change, resource depletion. Introduction to term sustainable development, history of sustainable development, sustainable development goals, etc.
2.	Various aspects of sustainability- Social, Environmental and Economical. Sustainable site planning, low impact design, climate responsive architecture, bio mimicry, water and energy efficiency, social and economic equity
3.	Sustainable communities and cities- Sustainable urban planning and design, wellbeing of people- physical, ecological, economic, social, health and equity factors. Introduction to Terminology- Sustainable urbanism and its history. Elements of sustainable urbanism- Compactness, sustainable corridors, pollution prevention, high performance buildings and infrastructure, clean energy mechanism.
4.	Introduction to various rating systems available for sustainable cities and communities- LEED ND, IGBC green townships, villages and cities.

1.	LEED ND- LEED for neighbourhood development published by USGBC.
2.	IGBC green townships manual.
3.	IGBC green cities manual
4.	IGBC green villages manual
5.	Related Acts, of Centre or State Govt. of India.
6.	Our common future: Report of the World Commission on Environment and Development, 1987 oxford university
	press.

BA21106S: Electives – XIII (B) Building Performance & Compliance

ANY ONE OF THE ELECTIVES (A) or (B)

Course Information:

Sem.	Code	Course	L	S	Т	СТ	Cr	ΤM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
Х	BA21106S	Electives – XIII (B) Building	2	0	2	STW	2	100	20	0	20	0	60
	(B)	Performance & Compliance											

Learning Objectives:

After successful completion of this course:

Students will gain basic knowledge of Building systems and Energy efficient design options that impact indoor environment qualities.

Detailed Syllabus:

1.	Introduction. Basics of thermal comfort, indoor air quality, daylight & windows and how these relate to optimal building system design. Energy consumption in buildings.
2.	Impact of changes in building envelope on indoor environmental qualities. Energy simulation tools, analysis and Building performance assessment.
3.	National Building Code (NBC) and Energy Conservation Building Code (ECBC) of India to provide minimum requirements
	for energy efficient design and construction of buildings; various compliance approaches.
4.	Building Envelope; Comfort Systems; Lighting systems; Electrical and renewable energy systems.

1.	Energy Principles in Architectural Design by Edward Dean.
2.	Building Performance Simulation for Design and Operation, Hensen, JLM
3.	ASHRAE Fundamentals handbook, 2013
4.	National Building Code (NBC)
5.	Energy Conservation Building Code (ECBC) of India
6.	Climate and Architecture, Torben Dahl.