LINGAYA'S VIDYAPEETH

SCHEME OF STUDIES

SESSION: 2019-20

School: School of Architecture and Planning	Batch: 2019
Department:	Year: I
Course: B.Arch	Semester: I

SN	Category	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PC	ARC-101	Principles of Architecture - I	2	0	0	2	25	25	50	-	-	100
2	PC	ARC-102	History of Architecture - I	2	0	0	2	25	25	50	-	-	100
3	PC	ARC-103	Architectural Psychology	2	0	0	2	25	25	50	-	-	100
4	PC	CEA-101	Environmental Science and Ecology	2	0	0	2	25	25	50	-	-	100
5	BS AE	CEA-102	Structures in Architecture - I	2	0	0	2	25	25	50	-	-	100
6	PC	ARC-154	Basic Design and Visual Arts - I	1	0	4	3	-	-	-	50	50	100
7	PC	ARC-155	Architectural Drawing and Graphics - I	1	0	4	3	-	-	-	50	50	100
8	BS AE	ARC-156	Building Material & Construction - I	1	0	4	3	-	-	-	50	50	100
9	SEC	ARC- 157	Model Making Workshop - I	1	0	2	2	-	-	-	50	50	100
10	SEC	ARC-158	Computer Application in Architecture - I	1	0	2	2	-	-	-	50	50	100
11	SEC	PDP-101	Induction & Nurturing Hobbies	0	0	2	1	-	-	-	50	50	100
			Total---->	**15**	**0**	**18**	**24**	**125**	**125**	**250**	**300**	**300**	**1100**

LINGAYA'S VIDYAPEETH

SCHEME OF STUDIES

SESSION: 2019-20

School: School of Architecture and Planning	Batch: 2019
Department:	Year: I
Course: B.Arch	Semester:II

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PC	ARC-110	Principles of Architecture - II	2	0	0	2	25	25	50	-	-	100
2	PC	ARC-111	History of Architecture - II	2	0	0	2	25	25	50	-	-	100
3	PC	ARC-112	Sociology in Architecture	2	0	0	2	25	25	50	-	-	100
4	BS AE	CEA-103	Structures in Architecture - II	2	0	0	2	25	25	50	-	-	100
5	PC	ARC-164	Basic Design and Visual Arts - II	1	0	4	3	-	-	-	50	50	100
6	PC	ARC-165	Architectural Drawing and Graphics - II	1	0	4	3	-	-	-	50	50	100
7	BS AE	ARC-166	Building Material & Construction II	1	0	4	3	-	-	-	50	50	100
8	SEC	ARC-167	Model Making Workshop - II	1	0	2	2	-	-	-	50	50	100
9	SEC	ARC-168	Computer Application in Architecture - II	1	0	2	2	-	-	-	50	50	100
10	SEC	PDP-102	People Connect	0	0	2	1	-	-	-	50	50	100
			Total---->	**13**	**0**	**18**	**22**	**100**	**100**	**200**	**300**	**300**	**1000**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2020-21

School: School of Architecture and Planning	**Batch: 2019**
Department:	**Year: II**
Course: B.Arch	**Semester:III**

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PC	ARC-201	History of Architecture-III	2	0	0	2	25	25	50	-	-	100
2	PC	ARC-203	Building Sciences	2	0	0	2	25	25	50	-	-	100
3	BS AE	ARC-204	Building Services-I	2	0	0	2	25	25	50	-	-	100
4	BS AE	CEA -211	Structures in Architecture-III	2	0	0	2	25	25	50	-	-	100
5	PC	ARC-255	Architectural Design-I	2	0	6	5	-	-	-	50	50	100
6	BS AE	ARC-256	Building Material & Construction III	1	0	4	3	-	-	-	50	50	100
7	SEC	ARC-257	Computer Applications in Architecture-III	1	0	2	2	-	-	-	50	50	100
8	SEC	CEA -260	Surveying	0	0	4	2	-	-	-	50	50	100
9	SEC	PDP-201	Personality Development & Grooming	0	0	2	1	-	-	-	50	50	100
			Total---->	**12**	**0**	**18**	**21**	**100**	**100**	**200**	**250**	**250**	**900**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2020-21

School: School of Architecture and Planning	Batch: 2019
Department:	Year: II
Course: B.Arch	Semester: IV

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PC	ARC-210	History of Architecture - IV	0	0	4	2	-	-	-	100	100	100
2	BS AE	ARC-214	Building Services - II	0	0	4	2	-	-	-	100	100	100
3	PC	ARC-215	Estimation & Costing - I	0	0	2	1	-	-	-	100	100	100
4	BS AE	ARC-216	Building Structure IV	0	0	2	1	-	-	-	100	100	100
5	PC	ARC-271	Architectural Design - IV	0	0	12	6	-	-	-	100	100	100
6	BS AE	ARC-272	Building Construction -IV	0	0	6	3	-	-	-	100	100	100
7	SEC	PDP-202	Life Skills	0	0	2	1	-	-	-	100	100	100
8	SEC	ARC-268	Computer Application in Architecture - IV	0	0	2	1	-	-	-	100	100	100
9	PC	ARC-269	Architectural Graphics- III	0	0	2	1	-	-	-	100	100	100
10	PAECC	ARC-280	Summer Internship - I	0	0	0	2				100	100	100
			Total---->	**0**	**0**	**36**	**20**	-	-	-	**1000**	**1000**	**1000**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2021-22

School: School of Architecture and Planning	Batch: 2019
Department:	Year: III
Course: B.Arch	Semester: V

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	BS AE	ARC -306	Building Structures -V	0	0	2	1	-	-	-	100	100	100
2	BS AE	ARC-303	Building Services-III	0	0	2	1	-	-	-	100	100	100
3	PC	ARC -304	Estimation & Costing-II	0	0	2	1	-	-	-	100	100	100
4	PC	ARC -305	Theory of Design	0	0	2	1	-	-	-	100	100	100
5	PC	ARC-358	Architectural Design-V	0	0	18	9	-	-	-	100	100	100
6	BS AE	ARC-359	Building Construction-V	0	0	6	3	-	-	-	100	100	100
7	SEC	ARC-357	Computer Application in Architecture-V	0	0	4	2	-	-	-	100	100	100
8	PAECC	ARC 360	Winter Internship -I	0	0	0	3	-	-	-	100	100	100
			Total---->	**0**	**0**	**36**	**21**	-	-	-	**800**	**800**	**800**

LINGAYA'S VIDYAPEETH

SCHEME OF STUDIES

SESSION: 2021-22

School: School of Architecture and Planning	Batch: 2019
Department:	Year: III
Course: B.Arch	Semester: VI

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	BS AE	ARC-372	Building Structures-VI	0	0	2	1	-	-	-	100	100	100
2	PC	ARC-314	Human Values	0	0	2	1	-	-	-	100	100	100
3	PC	ARC-315	Building Economics	0	0	2	1	-	-	-	100	100	100
4	PC	ARC-370	Architectural Design-VI	0	0	20	10	-	-	-	100	100	100
5	BS AE	ARC-371	Building Construction-VI	0	0	4	2	-	-	-	100	100	100
6	SEC	ARC-368	Computer Application in Architecture- VI	0	0	4	2	-	-	-	100	100	100
7	PC	ARC-369	Research/dissertation	0	0	2	1	-	-	-	100	100	100
8	PAECC	ARC-380	Summer Internship-II	0	0	0	2	-	-	-	100	100	100
			Total---->	**0**	**0**	**36**	**20**	-	-	-	**800**	**800**	**800**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2022-23

School: School of Architecture and Planning	Batch: 2019
Department:	Year: IV
Course: B.Arch	Semester:VII

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	BS AE	ARC-406	Environmental Studies	0	0	2	1	-	-	-	100	100	100
2	PC	ARC-407	Project Management	0	0	2	1	-	-	-	100	100	100
3	PE	ARC-408	Product Design (Elective-1)	0	0	4	2	-	-	-	100	100	100
		ARC-409	Art Appreciation (Elective-1)					-	-	-			
4	PE	ARC-410	Low Cost Architecture (Elective 2)	0	0	4	2	-	-	-	100	100	100
		ARC-411	Architectural Journalism(Elective 2)					-	-	-			
5	PC	ARC-460	Architectural Design VII	0	0	16	8	-	-	-	100	100	100
6	BS AE	ARC-461	Building Construction VII	0	0	4	2	-	-	-	100	100	100
7	PC	ARC- 459	Research /Dissertation	0	0	4	2	-	-	-	100	100	100
			Total---->	**0**	**0**	**36**	**18**	-	-	-	**700**	**700**	**700**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2022-23

School: School of Architecture and Planning	**Batch: 2019**
Department:	**Year: IV**
Course: B.Arch	**Semester: VIII**

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PAECC	ARC-480	Professional Office Training	0	0	0	22	-	-	-	100	100	100
			Total---->	**0**	**0**	**0**	**22**	-	-	-	**100**	**100**	**100**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2023-24

School: School of Architecture and Planning	Batch: 2019
Department:	Year: V
Course: B.Arch	Semester: IX

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PC	ARC-502	Professional Practice -I	0	0	4	2	-	-	-	100	100	100
2	PE	ARC-503	Disaster Mitigation & Management (Elective 3)	0	0	4	2	-	-	-	100	100	100
		ARC-504	Sustainable Cities & Energy Compliance (Elective 3)					-	-	-	100	100	100
3	PE	ARC-505	Transport Planning (Elective 4)	0	0	4	2	-	-	-	100	100	100
		ARC-506	Urban & Regional Planning (Elective 4)					-	-	-	100	100	100
4	PC	ARC-557	Architectural Design IX	0	0	24	12	-	-	-	100	100	100
			Total---->	**0**	**0**	**36**	**18**	-	-	-	**400**	**400**	**400**

LINGAYA'S VIDYAPEETH
SCHEME OF STUDIES
SESSION: 2023-24

School: School of Architecture and Planning	Batch: 2019
Department:	Year: V
Course: B.Arch	Semester: X

SN	Cate-gory	Course Code	Course Name	Periods			Cr	Evaluation Scheme					Subject Total Marks (IP+EXP)/2
								Theory			Practical		
				L	T	P		ABQ	MSE	ESE	IP	EXP	
1	PC	ARC-515	Professional Practice -II	0	0	4	2	-	-	-	100	100	100
4	PC	ARC-565	Thesis	0	0	44	22	-	-	-	100	100	100
			Total---->	**0**	**0**	**48**	**24**	-	-	-	**200**	**200**	**200**

Abbreviations:
PC : Programme Core Course
BS AE : Building Science and applied engineering
SEC : Skill enhancement
L : Lecture
T : Tutorial
P : Practical
ABQ : Assignment Based Quiz
MSE : Mid Semester Examination
ESE : End Semester Examination
IP : Internal Practical
EXP : External Practical
Cr : Credit
PE : Professional Elective Course
PAECC : Professional ability enhancement compulsory course
SEC : Skill enhancement

Program Outcomes (PO's)

PROGRAMME OUTCOMES are skill sets and attributes which all students will acquire during the program and will be competent in.

Architecture Graduates will be able to:

1. Architectural knowledge: Interpreted the knowledge of Design parameters, mathematical analysis, construction technology, architectural fundamentals and latest development in various field for the solution of complex architectural design problems.
2. Problem analysis: Identify, formulate, review research literature and analysis of complex architectural problems reaching substantiated conclusions using first principles of basic design, users comfort concerns, climate oriented solutions, and architectural services.
3. Design/development of solutions: Design solutions for complex architectural problems and design system components or processes that meet the specified user and environmental needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental issues.
4. Conduct investigations of complex problems: Integrate research-based knowledge and research methods including experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern analytical tools and simulation of complex architectural activities with an understanding of the limitations.
6. The architect and society: Evaluate contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional architectural practice.
7. Environment and sustainability: Elaborate the impact of the professional architectural solutions in societal and environmental contexts, demonstrate the knowledge and need for sustainable development.
8. Ethics: Integrate ethical principles and commitment to professional ethics, responsibilities and norms of the architectural practice.
9. Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
10. Communication: Communicate effectively on complex architectural activities with the architectural and allied community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
11. Project management and finance: Synthesize knowledge and understanding of the architectural and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Relate to the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of environmental, social, economic, and technological changes.

Syllabus
Semester-I

Course code	Subject Name	L	T	P	Credits
ARC-101	PRINCIPLES OF ARCHITECTURE - I	2	0	0	2

Course Objectives:

- To introduce the student to the world of architecture and establish the key elements involved in the creation of aesthetically appealing and practically appropriate architecture.
- The subject is designed to provide an insight into the principles and processes that underpin the discipline of architecture.
- It is aimed to teach students the key practical and theoretical influences that inform architectural practice enabling students to understand and analyse architecture.

UNIT-1: [6]

INTRODUCTION TO ARCHITECTURE: Description of architecture; architecture compared to visual and temporal arts; architecture and science and technology; Architecture and social science; the work of an architect compared to that of an artist, technologist and a designer/craftsman, scope of architecture; definition and concepts of architecture.

UNIT-2: [4]

ARCHITECTURE AS AN OCCUPATION: Types of architectural projects, career opportunities in the field of architecture, role, responsibilities and duties of an architect in a building project.

UNIT-3: [10]

ELEMENTS OF DESIGN –FUNCTIONAL Study of functional, aesthetic and structural components of architecture: parameters of design; anthropometrics; human activity and the use of spaces; spaces – their relation, interaction and information in a structure.

AESTHETIC: Elements and principles of visual composition, forms; functions of spaces and their flexibility; natural forms and shapes and their relation in designing; problems related to the understanding of the elements of architectural design; concepts of space and form and their perception; ordering principles.

STRUCTURAL: Elements of structure; elements of construction and their thoughtful use to enhance designs;

UNIT-4: [4]

ANALYSIS OF BUILDINGS: Analysis of architectural buildings through literature reviews and case studies, based on the functional, aesthetic and structural parameters.

UNIT-5: [4]

DESIGN PROCESS: Integration of aesthetics and function; understanding of formative ideas, organization concepts, spatial characteristics; massing and circulation in design analysis

TEXT BOOKS/REFERENCE BOOKS:

1. Snyder, J and Catanese, A, “Introduction to Architecture”, McGraw-Hill, 1979

2. Farrelly, Lorraine, “The Fundamentals of Architecture”, Ava Publishing, 2007

3. Voordt and Wegen, “Architecture in Use”, Architectural Press, 2005

4. Smithies, K.W., “Principles of Design in Architecture”, Van Nostrand Reinhold Co, 1981

5. Roger H. Clark and Michael Pause, “Precedents in Architecture”, Van Nostrand Reinhold Co, 1996

Course outcomes:	
1.	Awareness of basic aspects and expectations of the career as an architect , exact notes and data on role and responsibility
2.	Students know about the initial process of designing , understanding and application of ideas and calculation basics for a design
3.	Selection of various famous buildings with their specific data and complete study for better understanding of pre existing architectural marvels.

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-102	**HISTORY OF ARCHITECTURE - I**	**2**	**0**	**0**	**2**

Course Objectives:

- History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be. Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques,
- Studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.

UNIT-1: [4]

INTRODUCTION TO ANCIENT WORLD ARCHITECTURE: Art and culture of pre-historic man; stone henge; a brief outline of the Neolithic revolution and its impact on built forms– brief study of a few ancient settlements – Jericho, Catal Huyuk, Hassuna, Koln-Lindenthal & Skara Brae.

UNIT-2: [4]

ART AND ARCHITECTURE OF EGYPT: Evolution of Egyptian architecture- factors affecting development; spatial planning and characteristic features; tombs- mastabas, pyramids; temples; sphinx, obelisks etc.

UNIT-3: [4]

ART AND ARCHITECTURE OF MESOPOTAMIA: Factors affecting the development of art and architecture of Mesopotamia; spatial planning and characteristic features of the architecture of Sumerian, Babylonian, Assyrian and Persian periods; Ziggurats etc

UNIT-4: [6]

ART AND ARCHITECTURE OF GREECE & ROME: Evolution of Greek architecture- factors affecting development; characteristic features of Aegean and Helladic architecture; Hellanic and Hellenistic periods; Greek classic orders; agora and other important public buildings/ spaces. Evolution of Roman architecture- factors affecting development; characteristic features Roman classic orders; forums; basilicas; coliseum and other important public buildings/ spaces.

UNIT-5: [10]

EARLY CHRISTIAN ARCHITECTURE , ROMANESQUE AND GOTHIC ARCHITECTURE: Factors affecting evolution and development of early Christian and Byzantine, characteristic features basilican church and centralized church typology Factors affecting evolution and development of Romanesque and Gothic architecture, characteristic features and typical examples, spatial planning, construction and other features- rib and panel vaulting etc; church and the precinct, cathedrals, monastic establishments, parish churches; elements of special attributes .English and French church planning; secular architecture- manor houses, castles; town planning principles.

TEXT BOOKS/REFERENCE BOOKS:

1. Cruickshank, D., Fletcher, B., Saint A., "Banister Fletcher's - A History of Architecture", Architectural Press, 1996.
2. Risebero, Bill, " The Story of Western Architecture", MIT Press, 2001
3. Ching Francis D.K., Jarzombek, Mark M., Prakash, Vikramaditya, "A Global History of Architecture", Wiley, 2006.
4. Hiraskar, G.K., **"**The Great Ages of World Architecture (with Introduction to Landscape Architecture)", Dhanpat Rai Publications (P) Ltd, 2009

Course outcomes:	
1.	This central thought of the civilization has permeated the students in various related fields such as religion, arts, science, literature, social and economic setup, which in turn were instrumental to the evolution of architecture specific to the area
2.	Prehistoric age and Early Civilizations, attempts at sensitizing the students to view architecture as one of the many products of the civilization.

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-103	**ARCHITECTURAL PSYCHOLOGY**	**2**	**0**	**0**	**2**

Course Objectives:

- This course is aimed at helping the student understand the built environment by providing a look at architecture within the framework of human sciences:
- Human psychology and society influence and inform architecture and how in turn architecture affects our lives.
- Students develop critical observation skills and investigate buildings as manifestations of religious, social, and personal values.

UNIT-1: [8]

ENVIRONMENTAL PSYCHOLOGY &PERCEPTION: Relation to architecture and planning; meaning of environment; measurement of environmental stimuli from psychological aspect; behavioral effects of environmental conditions: physical - noise, temperature and air pollution; social- overcrowding and isolation; extra ordinary- catastrophe. spatial perception: perception of distance, size and movement; meaning of colour and form; depth perception; visual illusions in architecture; spatial thinking- social and cultural influences on environmental perception.

UNIT-2: [6]

TERRITORIAL BEHAVIOUR AND PERSONAL SPACE: Concept of personal space and territoriality, individual and situational as determinants of personal space; consequences of too much or too little of personal space; personal space and environmental space as implications for design aspects; adaptation to environment - behavioral aspects of adaptation to familiar and unfamiliar environment; spatial experience; living requirements and satisfaction, etc.

UNIT-3: [6]

ARCHITECTURAL PSYCHOLOGY & PSYCHOLOGICAL AESTHETICS: Psychological effects of various architectural means: line, form, space, textures, colour, light, scale etc; case studies. Measurement of communication through art and architecture; signs and symbols in architecture; determination of pleasantness and unpleasantness as psychological factors in environmental design.

UNIT-4: [6]

ENVIRONMENTAL SETTINGS: Nature and effects of home, work, educational or institutional (e.g. nursing home, hospital, prison, etc.) environments as they affect human health and cognitive functioning; restorative effects of natural environments

UNIT-5: [2]

LOCAL IDENTITY: Concept of local identity, globalization and identity, maintaining a distinct identity in a globalised world etc.

Course outcomes:	
1.	Detail study of spaces, behavior, environmental aspects etc
2.	Understanding of environmental settings and its impacts on human health, functioning and restorative effects.
3.	Theory and understanding on local identity , globalization in architectural terms.

TEXT BOOK: Parmar, V. S., "Design Fundamentals in Architecture", Somaiya Publications Pvt. Ltd., 1973.

REFERENCE BOOKS

1. Bell, P.A., Greene, T.C., Fisher, J.D., & Baum, A. "Environmental Psychology", 5th edition, Harcourt, Inc.: Fort Worth, TX, 2001.
2. Gallagher, W., "The Power of Place", Harper Perennial, New York, 1994.
3. Rapoport, Amos, "House Form and Culture", Prentice Hall, 1969.
4. Broadbent, Geoffrey. "Design in Architecture: Architecture and the Human Sciences", John Wiley and Sons, 1973.

Course code	**Course title**	**L**	**T**	**P**	**Credits**
CEA -101	**ENVIRONMENTAL SCIENCE AND ECOLOGY**	**2**	**0**	**0**	**2**

Course Objectives:

- Environmental Studies is a multidisciplinary area, the issues of which everyone should know.
- The aim of the course is to make everyone aware of environmental issues like continuing problems of pollution, loss of forest, solid waste disposal, and degradation of environment. Issues like economic productivity and national security, global warming, the depletion of ozone layer and loss of biodiversity are other serious concerns before mankind.

UNIT-1: [6]

ENVIRONMENTAL STUDIES & ECOSYSTEMS: Basic definitions related to environment; scope, vis-à-vis environmental science and environmental engineering; causes of environmental degradation, atmospheric composition and associated spheres, habitat and climate; objective, goals and principles involved in environmental education, environmental awareness, environmental ethics, environmental organization and their involvement. Concept of an ecosystem, structure and function of an ecosystem, producers, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids; characteristic features, structure and

function of the following ecosystem - forest ecosystem, grassland ecosystem desert ecosystem and aquatic ecosystems.

UNIT-2: [6]

NATURAL RESOURCES: Renewable and non-renewable resources; forest resources, over-exploitation, and deforestation / afforestation; water resources, impact of over-utilization of surface and ground water, floods, drought, conflicts over water, dams; mineral resources: dereliction of mines, environmental effects of extracting and using mineral resources; food resources, modern agriculture and its impact, problem associated with fertilizer and pesticide, water logging, salinity ; energy resources, renewable, non-renewable energy sources, solar energy, wind energy, hydro energy, biomass energy, geothermal energy, nuclear energy and its associated hazards; land as a resource, land degradation, man induced landslides, soil erosion and desertification

UNIT-3: [4]

BIODIVERSITY AND ITS CONSERVATION: Bio-geographical classification of India; biodiversity at global, national and local levels, India as a mega-diversity nation, hot-spots of biodiversity; value of biodiversity-consumptive use, productive use, social, ethical aesthetic and option values; threats to biodiversity; conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.

UNIT-4: [6]

ENVIRONMENTAL POLLUTION& SOCIAL ISSUES: Causes, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, solid waste management, e-waste management; disaster management – floods, earthquake, cyclone and landslides. Water conservation, rain water harvesting, watershed management; climate change, global warming, acid rain, ozone layer depletion; Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act.

UNIT-5: [6]

HUMAN POPULATION AND THE ENVIRONMENT: Population growth, population explosion – family welfare programmes ; role of information technology in environment and human health; case studies, Chipko movement, Saradar Sarovar dam, mining and quarrying in Udaipur, salinity and water logging in Punjab, Haryana and Rajasthan, Bhopal gas tragedy, Chernobyl nuclear disaster, arsenic pollution in ground water

TEXT BOOKS/REFERENCE BOOKS:

1. Agarwal, K. C., “Environmental Biology”, Nidi Publ. Ltd., 2001
2. Brunner R. C., “Hazardous Waste Incineration”, McGraw Hill, 1989.
3. Cunningham, W.P., Cooper, T.H. Gorhani, E. and Hepworth, M.T., “Environmental Encyclopedia”, Jaico Publ. House, 2001.
4. Kaushik, Anubha, and Kaushik, C.P., “Perspectives in Environmental Studies”, New Age International Publishers, 2004

Course outcomes:	
1.	Modern Science of Climatology in the context of climate and weather as determinants of Design and Form of Habitat and Landscape throughout the ages at the Macro and Micro levels.
2.	Students have knowledge and application to building design as per the environment.
3.	Detail knowledge on environmental pollution types, causes and various measures to prevent them.

Course code	Course title	L	T	P	Credits
CEA-102	STRUCTURES IN ARCHITECTURE - I	2	0	0	2

Course Objectives:

- To introduce the basic concept of structures and enable the students to analyse, understand the fundamentals and working of various parts of different structural systems

UNIT-1: [8]

ELEMENTS OF STATICS: Law of Parallelogram of Forces, Resolution of Forces, Law of Triangular of forces, Polygon of forces, Theorem of Resolved parts, Resultant of a Number of Concurrent Coplanar forces, Moment of a Force.

UNIT-2: [8]

SIMPLE STRESSES AND STRAINS: Elasticity, Stress, Strain, Types of Stresses, Elastic Limit, Hooke's Law, Modulus of Elasticity, Stresses in Composite Bars, Primary or Linear Strain, Poisson's ratio, Shear Stress, Principal stresses and strains

UNIT-3: [4]

SHEAR FORCE AND BENDING MOMENT: Beams, Shear Force and Bending Moment, Moment of Resistance, SF and BM diagrams for simple cases

UNIT-4: [4]

CENTER OF GRAVITY AND MOMENT OF INERTIA: Definitions, Methods of Finding CoG of Simple Figures, Center of Parallel Forces, Important Theorems, Section Modulus, Calculation of MI by first Principal and its application, MI of composite sections

UNIT-5: [4]

TYPES OF LOADS: Concepts and definitions of dead load, imposed load, seismic load, wind load and snow load as per IS 875-1987 (Part I-V) and IS 1893-2002

TEXT BOOKS/REFERENCE BOOKS:

1. Engineering Mechanics and Strength of Materials; R.K. Bansal
2. Strength of Materials; R.S. Khurmi
3. Applied Mechanics and Strength of Materials; R.S. Khurmi
4. Civil Engineering Handbook; P.N. Khanna

Course outcomes:	
1.	This course is to provide the students with basic concept of mathematical principles, leading to primarily an easy understanding of various topics under "STRUCTURE
2.	The course also provides basic clues to mathematical models and research techniques in the field of architecture.

Course code	Course title	L	T	P	Credits
ARC-154	BASIC DESIGN & VISUAL ARTS - I	1	0	4	3

Course Objectives:

- The course Basic design is aimed at imparting a good base in design through thoughtful designing of simple two dimensional and three dimensional compositions. Also, the Visual Arts component intends to acquaint the students with various drawing principles and artistic techniques; how to sketch and draw at all stages of the design process.

COURSE CONTENT:- [70]

PART-I: BASIC DESIGN

1. To study the elements of visual composition.
2. To study the principles of visual composition.
3. To study the Ordering principles.
4. To study the colour wheel, colour schemes and its application on architectural forms and spaces; principles of harmony and contrast and degree of chromatism.
5. To study textures and textures schemes.
6. To study and demonstrate the application of basic design in architecture: Adopt compositions, murals and sculptures for semi recreational and semi functional architectural spaces.

PART-II: VISUAL ARTS

1. To study the basic elements of free hand sketching.
2. To learn the various sketching techniques and mediums in pencil and ink.
3. To learn how to build a sketch - composing a view, establishing structure, scale, layering tonal values, adding details; achieving spatial depth in drawings; sighting techniques.
4. Free hand Sketching of furniture pieces, parts of building in relation with human scale and proportions.
5. Free hand Sketching of architectural elements and landscapes.

TEXT BOOKS/REFERENCE BOOKS:

1.Ching, Francis D. K., "Architecture: Form, Space, and Order", Wiley and Sons, 2007.
2.Wallschlaeger, C and Snyder, S.B., "Basic Visual Concepts and Principles for Artists, Architects and Designers", McGraw Hill, 1992.
3.Laseau, P, "Graphic Thinking For Architects and Designers", John Wiley and Sons, 2001
4.Ching, Francis D. K., "Drawing: A Creative Process", Wiley and Sons,1989
5.Farrelly Lorraine, "Basic Architecture 01: Representational Techniques", Ava Publishing, 2008.
6.Evans, Ray, "Drawing and Painting Architecture", Van Nostrand Reinhold Company, 1983.

Course outcomes:	
1.	The most initial stage of designing this exercise teach compositions, colors contrast and various design elements and other fundamentals of designing.
2.	Application of design principles in two dimensional and three dimensional compositions.

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-155	**ARCHITECTURAL DRAWING & GRAPHICS - I**	**1**	**0**	**4**	**3**

Course Objectives:

- Architectural drawing and graphics is the primary medium for development and communicating design concepts.
- The students are trained to develop imaginative and three dimensional spatial capabilities and acquire the skill of reading plans, sections and elevations and understanding the the drawing conventions and symbols used in them

COURSE CONTENT:- [70]

1. To understand and learn about the various drafting tools required in architectural drafting - pencils, grades of graphite leads, technical pens etc.
2. To study the various drafting techniques, line quality etc.

3. To learn about the drafting procedure and exercises on architectural letterings.
4. To construct architectural scales and apply them to real object and drawings (Plain scale, diagonal scale, comparative scales).
5. To introduce the principles of orthographic projections and prepare drawings on orthographic projection of simple regular two dimension shapes.
6. To prepare drawings on orthographic projection of complex solids, hollow object and sections.
7. To study the principles and techniques of axonometric, oblique and isometric views and construct three dimensional views of basic and complex geometrical shapes.
8. To study the interpenetration of solids.
9. To study the development of surfaces.
10. To study the sections of solids.

TEXT BOOKS/REFERENCE BOOKS:

1. Bhatt, N.D., "Engineering Drawing: Plane and Solid Geometry", Charotar Publishing House,
2. Leslie, Martin C., "Architectural Graphics", Macmillan Pub Co, 1970.
3. Parkinson, A.C., "A First Year Engg. Drawing", Sir Issac Pitman and Sons.
4. Black, Earl D., "Engineering and Technical Drawing", Van Nostrand Reinhold Co., 1972.
5. Ching, Francis D. K., "Architectural Graphics", Van Nostrand Reinhold, 2003.

Course outcomes:	
1.	Students shall be familiarized with a range of techniques of expression beginning with manual drawing

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-156	**BUILDING MATERIAL & CONSTRUCTION -I**	**1**	**0**	**4**	**3**

Course Objectives:
➢ To give an introduction to building elements and expose the student to the process of building construction

COURSE CONTENT:- **[70]**

1. To introduce the various terminologies used in brick masonry works.
2. To study and prepare drawings of bonds in brick masonry; bonds in columns, corners and junctions, jointing and pointing; buttresses; sills; jambs; corbels; copings;
3. To study and prepare drawings of cavity walls and reinforced brickwork.
4. To study the various tools used in brick masonry works
5. To study the defects in brick masonry: cracking in brick walls etc; supervising brick masonry works.
6. To study and prepare drawings on various stone masonry works: Rubble masonry, Ashlar masonry etc.
7. To study the type of walling and joints, dressing of stone surfaces; coping; supervising stone masonry works.
8. To study various types of composite masonry.
9. To demonstrate various quality test of bricks, stones and timber.
10. To study and prepare drawings on simple foundation for masonry load bearing walls and piers.
11. CLAY AND CLAY MATERIALS: Bricks, terracotta, tiles etc; Bricks: types of bricks; study of properties of constituent components, manufacturing process, quality test of bricks.
12. RURAL AND TRADITIONAL MATERIALS (Mud & Stone): Mud: mud as a building

material; soil stabilization: need for soil stabilization, stabilized soil blocks; rural materials: bamboo, casuarina, coconut, palm, hay, coir – properties and uses;

13. Types of stones; study of properties of constituent components; methods of quarrying of stones; properties and uses of principal building stones.
14. LIME, CEMENT AND CEMENT PRODUCTS: Lime: uses and properties; preparation of lime mortar; functions and requirements of a good mortar; mix properties for various works; Concrete: study of properties of constituent components, manufacturing process, quality tests of cement, lime, sand, aggregates, concrete and mortar.

TEXT BOOKS/REFERENCE BOOKS:

1.Rangwala, S. C., "Engineering Materials (Material Science)", Charotar Publishing House, 2007.
2.Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
3.McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955
4.Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons,
5.Barry, R**,** "The Construction of Buildings", the English Language Book Society and Crosby Lockwood, 1976
6.Chudley, Roy, "Construction Technology", Longman, 2005

Course outcomes:	
1.	Students explore the process of building construction, the components of buildings and the materials, skill and equipment used in shaping them.
2.	Introduction to building construction. Walls, brick works and joints and composite masonry are covered

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-157	**MODEL MAKING WORKSHOP - I**	**1**	**0**	**2**	**2**

Course Objectives:

- Modeling allows an architect to explore an idea in a three dimensional form, allowing communication of the idea in an accessible way.

COURSE CONTENT:- [42]

1. To introduce the carpentry tools, processes, joints and wood working machines.
2. To prepare simple three dimensional objects like cubes pyramids etc.
3. To create complex three dimensional forms for models using carpentry methods.
4. To demonstrate the use of carpentry tools in making joints such as dovetail joint, mortise and tenon joint, lap joint, butt joint etc to be used for making furniture.
5. To demonstrate fixing of plywood, blockboards, commercial boards etc.
6. To study the application of plywood, blockboards, commercial boards etc. in furniture.
7. To introduce the various welding equipments, processes and its applications.
8. To introduce to metallic sections, joinery tools, joinery processes and working with them.
9. To prepare joints (Lap and butt) by metal arc welding.
10. To learn and use various painting methods-brush, spray, hot spray etc.

TEXT BOOKS/REFERENCE BOOKS:

1. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.
2. Hazra and Chaudhary, "Workshop Technology - Vol. I and II", Asian Book Comp, 1998.

Course outcomes:	
1.	Along with introduction to carpentry tools, fixing, and preparation of joints in detail and understanding.

Course code	Course title	L	T	P	Credits
ARC-158	COMPUTER APPLICATIONS IN ARCHITECTURE - I	1	0	2	2

Course Objectives:
➢ This course will enable the students to understand the basics of computer and to know the basics of MSOffice, enabling the student prepare simple and interactive presentations using computers.

COURSE CONTENT:- [42]

1. To introduce and study about the basics of computer hardware and software components; computer terminology.
2. To introduce and study about windows and its applications.
3. To learn the concepts of Internet, server types, connectivity; applications of internet- using e-mail, browsing etc.
4. To understand the concepts of e-commerce.
5. To study in detail Microsoft Word; To Create a document with all formatting effects.
6. Exercises on document preparation using MS Word
7. Create a document with tables, labels in MS word and to create a document to send mails using mail merge option.
8. To learn about the concept of spreadsheet/ worksheets, charts, formulas, functions etc using MS Excel.
9. To Create an Excel File to analyze the student‟s performance. Create a chart for the above data to depict it diagrammatically.
10. Create Excel sheet to use built-in-function.
11. To prepare slide shows and presentations using MS PowerPoint;
12. To create architectural presentations using computers: communicating information, presentation sequence, symbols, lettering and presentation formats etc.
13. To Create a Power Point presentation with varying animation effects with timer.

TEXT BOOKS/REFERENCE BOOKS:

1. Wallace, Wang, “Office 2010 for Dummies”, Wiley, 2010
2. Rajaraman, V., “Fundamentals of Computer”, Prentice Hall, 2004
3. Icon, Alexis and Leon, Mathew, “Internet for Everyone” Leon Techworld, 1997
4. Press, Barry and Press, Marcia, “Teach Yourself all about Computers”, IDG Books India, 20
5. Mansfield, R., “The Compact Guide to Microsoft Office”, BPB Publishers,1994

Course outcomes:	
1.	Introduction to basic software and hardware, and detail understanding of Microsoft power point presentations

SEMESTER II

Course code	Course title	L	T	P	Credits
ARC-110	PRINCIPLES OF ARCHITECTURE-II	2	0	0	2

Course Objectives:

- To introduce the student to the world of architecture and establish the key elements involved in the creation of aesthetically appealing and practically appropriate architecture.
- The subject is designed to provide an insight into the principles and processes that underpin the discipline of architecture.
- It is aimed to teach students the key practical and theoretical influences that inform architectural practice enabling students to understand and analyze architecture.

UNIT-1: [6]

FACTORS INFLUENCING ARCHITECTURE: Climate, topography, materials, economics, socio-cultural and technological influences etc

UNIT-2: [4]

ARCHITECTS & THEIR THEORIES ON ARCHITECTURE THROUGH THE AGES: Brief introduction to the styles propagated by architects from antiquity to modernism. Philosophy of architecture as propagated by some leading architects; study of selected writings and buildings.

UNIT-3: [6]

ARCHITECTURE CRITICISM: Introduction and need for architecture criticism in the academy of architects; criticism in day - to - day transaction, architecture criticism a societal perspective; types and characteristics, crux of normative criticism, interpretive criticism, description criticism, peer criticism.

UNIT-4: [4]

VERNACULAR AND RURAL ARCHITECTURE: Introduction to vernacular and rural architecture and its characteristics; rural environment and its architectural considerations; study of exemplary cases.

UNIT-5: [8]

CASE STUDIES & ANALYSIS OF BUILDINGS: Case studies of some old and new classical architectural projects from India and aboard with special focus on the above mentioned points. Analysis of architectural projects of various scales and types based on the above mentioned points.

TEXT BOOKS/REFERENCE BOOKS:

1. Snyder,J and Catanese, A, “Introduction to Architecture”, McGraw-Hill, 1979

2. Farrelly, Lorraine, “The Fundamentals of Architecture”, Ava Publishing, 2007

3. Voordt and Wegen, “Architecture in Use”, Architectural Press, 2005

4. Smithies, K.W., “Principles of Design in Architecture”, Van Nostrand Reinhold Co, 1981

5. Roger H. Clark and Michael Pause, “Precedents in Architecture”, Van Nostrand Reinhold Co, 1996

6. Pevsner Nikolaus, "Canons of Criticism", Penguin, Harmonds worth, 1971

Course outcomes:	
1.	This principal of architecture curriculum along with introduction to factors influencing will provide detail on vernacular, rural, and lastly a case study which covers the related issues.

Course code	Course title	L	T	P	Credits
ARC-111	HISTORY OF ARCHITECTURE-II	2	0	0	2

Course Objectives:

- History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be. Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques,
- Studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.

UNIT-1: [4]

ANCIENT ARCHITECTURE: Early Indian architecture up to 3rd century A.D; Indus valley civilization; study of Mohenjodaro and Harrapan architecture and planning; Vedic architecture of India; Vastu purush mandala and other canons of Hindu architecture.

UNIT-2: [8]

INDIAN TEMPLE ARCHITECTURE & INDO-ARYAN TEMPLE ARCHITECTURE: Temples: spatial arrangements, construction, ornamentation; elements of special attributes: columns, shikharas; temple complex etc Characteristic features and typical examples of Indo-Aryan temple architecture- temples of Orissa, Kashmir, M.P, Gujarat.

UNIT-3: [6]

CENTRAL HINDU TEMPLE ARCHITECTURE & DRAVIDIAN ARCHITECTURE: Early chalukyan architecture, the Rashtrakuta style and the Hoysala architecture – salient features and typical examples. Characteristic features and typical examples of Pallava, Pandava, Chola, Vijayanagar and Madura styles.

UNIT-4: [6]

BUDDHIST ARCHITECTURE IN INDIA: Development and characteristic features; stupas; Buddhist order- Ashoka pillars; Chaityas; rock cut architecture; Viharas etc.

UNIT-5: [4]

JAIN ARCHITECTURE IN INDIA: Development and characteristic features; Jain temple architecture etc.

TEXT BOOKS/REFERENCE BOOKS:

1. Grover, S. K., “Buddhist and Hindu Architecture in India”, CBS, 2008.
2. Thapar, B., “Introduction to Indian Architecture”, Periplus Editions, 2005.
3. Surendra S.,Indian Architecture:Hindu, Buddhist and Jain”Ajanta Offset and Packaging Ltd.,
4. Maheshwari and Garg, “Ancient Indian Architecture”, CBS, 2003.

Course outcomes:	
1.	Ancient architecture, focusing on Indian architecture it covers in depth of Hindu, Buddhist and jain architecture
2.	The emphasis of the discussions is on the nature and essence of the architectural product, related as far as possible to history of the process of their conceptualization, and process of construction. Use of the concepts of Style/ Typology/Morphology in histories of architecture

Course code	Course title	L	T	P	Credits
ARC-112	SOCIOLOGY IN ARCHITECTURE	2	0	0	2

Course Objectives:

- To examines how architectural forms both influence and react to socio-cultural phenomena.
- To inform architecture students in all phases of the design process, including the pre-design and programming, design, construction, and post-construction phases.

UNIT-1: [4]

INTRODUCTION TO SOCIOLOGY: Man and his social and physical environment; social groups and social structure; utility and relation with architecture;

UNIT-2: [6]

CULTURE ,SOCIETY & INDIAN COMMUNITIES: Meaning of culture and society, influence of socio-cultural patterns on architecture, case studies. Rural and urban communities; their social structures and problems; cultural heritage; rituals and community gathering etc.

UNIT-3: [8]

URBANIZATION & COMPARISON OF URBANIZATION: Trend and characteristics; dynamics of urban growth and social change; urban attitude, value and behavior; patterns of urbanization in India; migration studies; problems arising out of urbanization etc. Comparison of urbanization in underdeveloped countries with that in the west – salient features and characteristics

UNIT-4: [4]

SOCIAL ASPECT OF PHYSICAL ENVIRONMENT: Its implications and limitations in buildings; neighborhood planning; slum improvements and city fabric.

UNIT-5: [4]

COMMUNITY PARTICIPATION: Significance of public opinion and participation

Note: Assignments would be in the form of case studies comprising the sociological study of communities with their habitat and built environment

TEXT BOOK

Madan, G. R., "Indian Social Problems: Vol - 1 and 2", Allied Publishers Pvt Ltd, 2003.

REFERENCE BOOKS

1. Rapoport, Amos, "House Form and Culture", Prentice Hall, 1969
2. Broadbent, Geoffrey. "Design in Architecture: Architecture and the Human Sciences", John Wiley and Sons, 1973
3. Prakasa Rao, VLS, "Urbanisation in India", Concept Publishing Company, New Delhi, 1983.
4. Desai A.R., "Rural Sociology", Popular Prakashan, Bombay, 1984.
5. Smelsa, "Sociology", Prentice Hall, New Jersey, 1981.

Course outcomes:	
1.	Students familiarize with basic concepts/ theories of sociology/ psychology as relevant to architecture.
2.	Develop a language and vocabulary for discussions/ analysis on the sociological/ psychologicaldimensions of architecture

Course code	Course title	L	T	P	Credits
CEA-103	STRUCTURES IN ARCHITECTURE - II	2	0	0	2

Course Objectives:
➢ To introduce the basic concept of structures and enable the students to analyze, understand the fundamentals and working of various parts of different structural systems

UNIT-1: [4]

BENDING STRESSES IN BEAM: Introduction, Theory of Simple bending, assumptions in the theory, illustrative examples.

UNIT-2: [4]

DEFLECTION OF BEAMS: Deflection in simply supported beams and cantilever beams; double integration method and area moment method, illustrative examples.

UNIT-3: [6]

ANALYSIS OF STRESS: Introduction, principal stresses and principal planes, maximum shear stress, circular diagram for stresses, Mohr's circle, illustrative examples.

UNIT-4: [8]

SHEAR FORCE AND BENDING MOMENT: Types of supports, relationship between bending moment, shear force and load; shear force and bending moment diagrams in case of simply supported beams and cantilevers with distributed and point loads; simply supported beams with overhangs, moments applied to cantilevers and beams, illustrative examples.

UNIT-5: [6]

COLUMNS: Introduction, modes of failure, elastic instability, Euler's theory, End conditions and effective length, radius of gyration, slenderness ratio, strut and column, long column under eccentric loading, , illustrative examples.

TEXT BOOKS/REFERENCE BOOKS:

1. Khurmi, R.S., "Theory of Structures", S. Chand and Company, New Delhi, 2005
2. Khurmi, R.S. "Strength of Materials", S. Chand and Company, New Delhi, 2010
3. Punmia, B.C., "Strength of Materials and Mechanics of Structure", Standard Publishers and Distributors, 1971

Course outcomes:	
1.	Students have a feel for structural principles as they relate to a building design
2.	Enable to make an informed choice regarding the most appropriate structural system for the building
3.	Develop a reasonable understanding of its operational and economic implications.

Course code	Course title	L	T	P	Credits
ARC-164	BASIC DESIGN AND VISUAL ARTS - II	1	0	4	3

Course Objectives:

- The course Basic design is aimed at imparting a good base in design through thoughtful designing of simple two dimensional and three dimensional compositions.
- Visual Arts component intends to acquaint the students with various drawing principles and artistic techniques; how to sketch and draw at all stages of the design process

COURSE CONTENT:- [70]

PART-I: BASIC DESIGN

1. To study various linear forms for outdoor and indoor architectural spaces.
2. To study planer forms and explore the adoptability of these sculptures to architectural functions.
3. To Study solids and voids: creation of abstract and semi abstract symbolic sculptural forms and spaces.
4. To study the Transformation of forms - dimensional transformation, subtractive, additive forms, organization of additive forms.
5. To study the Articulation of forms- analytical study of the sculptural building forms and its critical appraisal of visual character.
6. To study architectural spaces: Elements defining spaces; factors affecting qualities of architectural spaces; spatial relationships and spatial organizations; movement through space.
7. To study and demonstrate the application of basic design in architecture: Adopt compositions, murals and sculptures for semi recreational and semi functional architectural spaces.

SUGGESTED STUDIO EXCERCISES:

Integration of construction and building material
Gate design, Bus stop, Kiosk, Mother dairy, Guard room, ATM room, Exhibition stalls, Milk booths.

PART-II: VISUAL ARTS

1. To study the effects and techniques of creating tonal values – hatching, cross hatching, scribbling, stippling; visual texture and grain.
2. To study the interaction of light with objects and surfaces; shade and shadows; modeling form.
3. To demonstrate the use of tonal values in architectural drawings.
4. To understand the application of free hand sketching in the design process: conceptual sketches, analytical sketches, observational sketches, contour drawings; parti diagrams; serial views; travel sketching; diagramming.
5. To study the importance of context in architectural drawings: importance of context in views and drawings; elements of context – drawing human figures; furniture and furnishings; vehicles; landscape elements.

TEXT BOOKS/REFERENCE BOOKS:

1. Ching, Francis D. K., “Architecture: Form, Space, and Order”, Wiley and Sons, 2007.
2. Wallschlaeger, C and Snyder, S.B., “Basic Visual Concepts and Principles for Artists, Architects and Designers”, McGraw Hill, 1992.
3. Laseau, P, “Graphic Thinking For Architects and Designers”, John Wiley and Sons, 2001
4. Ching, Francis D. K., “Drawing: A Creative Process”, Wiley and Sons,1989
5. Farrelly Lorraine,“Basic Architecture 01:Representational Techniques”,Ava Publishing,
6. Ching, Francis D. K., “Architectural Graphics”, Van Nostrand Reinhold, 2003

Course outcomes:	
1.	Students develop analytical and critical skills for looking at art and architecture.
2.	Students know the fundamental principles of architecture and architectural design,
3.	Understanding of Ideas, Concept, Form, Function and Meaning with respect to architecture

Course code ARC-165	Course title	L	T	P	Credits
	ARCHITECTURAL DRAWING & GRAPHICS -II	**1**	**0**	**4**	**3**

Course Objectives:

- Architectural drawing and graphics is the primary medium for development and communicating design concepts.
- Through this course the students are trained to develop imaginative and three dimensional spatial capabilities and acquire the skill of reading plans, sections and elevations .
- Understanding the drawing conventions and symbols used in them.

COURSE CONTENT:- [70]

1. To study the basic terms, principles, types and techniques of geometrical perspective drawing; linear perspectives: one, two and three point perspective.
2. To prepare perspective by measuring point method, angular and parallel perspective.
3. To prepare drawings on the presentation of interior and exterior views in one point perspective and section perspectives.
4. To prepare drawings using two point perspectives for simple objects, inclined planes, cylindrical objects, arches and other circular forms etc.
5. To introduce the basic principles of sciography and its application to the field of architecture.
6. To prepare drawings demonstrating sciography of two dimensional objects in plan and elevation.
7. To prepare drawings demonstrating sciography of three dimensional objects in plan, elevation and views (Isometric and perspective).
8. To study the various graphics codes and symbols used in architectural drawings: graphic conventions for scale, orientation, materials, line thicknesses and line types, symbols representing doors and windows, staircases, centerlines, property lines etc.
9. To study the different types of plans used in architectural drawings: site plan, location plan, floor plans, roof/ terrace plan, reflected ceiling plan; sections - design and construction; elevations.
10. To introduce the various types of architectural drawings – feasibility study drawings; conceptual drawings; presentation drawings; working drawings; specialized drawings.

TEXT BOOKS/REFERENCE BOOKS:

1. Gill, Robert W., “Basic Perspective”, Thames and Hudson, 1974
2. Malik, Shankar, “Perspective and Sciography”, Allied Publishers, 1994
3. Leslie, Martin C., “Architectural Graphics”, Macmillan Pub Co, 1970
4. Ching, Francis D. K., “Architectural Graphics”, Van Nostrand Reinhold, 2003

Course outcomes:	
1.	Students can learn the Graphic representation of concepts and design principles of two dimensional and three dimensional composition.
2.	Learning principles of development of lateral surfaces of solids, applying them to work out and drawing developed surfaces of simple geometric solids

Course code	Course title	L	T	P	Credits
ARC-166	BUILDING MATERIAL & CONSTRUCTION - II	1	0	4	3

Course Objectives:
➢ To give an introduction to building elements and expose the student to the process of building construction.

COURSE CONTENT:- [70]

1. To study and prepare drawings on various types of joinery used in carpentry.
2. To study various types of wooden doors: ledged, braced and battened, paneled, glazed, flush, sliding doors, revolving; doors with and without fanlight etc;
3. To study various types of wooden windows: fixed, side and top hung, casement, pivoted, louvered, bay, dormer, ventilators and fanlights etc.
4. To study and prepare drawings of the various types of metal (pressed steel and z-section) doors and windows.
5. To study methods of mosquito proofing of doors and windows.
6. To study and prepare drawings of the various fixtures and fastenings commonly used in doors and windows.
7. To introduce the various terminology of arches.
8. To prepare drawings on the various type of arches.
9. To study the procedure of centering of arches.
10. To study and prepare drawings on the types of lintels and sunshades.
11. TIMBER: Study of properties of timber, uses, seasoning process, quality tests; types of timber and defects in timber; protection from termites; techniques of preserving and finishing of timber; plywood, particle boards, block boards, PVC, laminates etc.
12. GLASS: Types of glass (plate, tinted, heat absorbing etc; structural glass bricks and glass crete; fiber glass and glass wool etc; properties, varieties and uses.

Note: Sessional will be in the form of reports, drawings and models. There shall be regular visits to construction sites.

TEXT BOOKS/REFERENCE BOOKS:

1. McKay, W.B., “Building Construction Volume I, II, III and IV”, Longmans, 1955
2. Ching, Francis D. K. and Adams, Cassandra, “Building Construction Illustrated”, Wiley and Sons, 2000
3. Barry, R, “The Construction of Buildings”, The English Language Book Society and Crosby Lockwood, 1976
4. Chudley, Roy, “Construction Technology”, Longman, 2005
5. Arora, S.P. and Bindra, S.P., “The Text book of Building Construction”, Dhanpat Rai Publications, 2009.

Course outcomes:	
1.	Awareness about the role of Wood in Building Industry.
2.	Know about different typology of Doors , Windows and their fixing Details

Course code	Course title	L	T	P	Credits
ARC-167	MODEL MAKING WORKSHOP - II	1	0	2	2

Course Objectives:
➢ Modeling allows an architect to explore an idea in a three dimensional form, allowing communication of the idea in an accessible way.

COURSE CONTENT:- [42]

1. To introduce the various materials used in architectural model making.
2. To introduce the various techniques of model making.
3. To model with paper, card board, mount board, thermocol, styrofoam, softwood, acrylic sheets and wire.
4. To study the development of simple and composite form, experiments on three dimensional forms such as cubes, pyramids, tetrahedron and forms to understand the spaces conceived by them.
5. To create organic forms by using clay, plaster of paris, metal scrap, jute fiber etc. for study of forms.
6. To study about murals.
7. To introduce and make various types of architectural models – concept models; development models etc.
8. To introduce the concept of illuminated models.
9. To work on sectional models.
10. To study and make presentation models using various materials etc.

Note: Students are required to prepare block models of groups of buildings including roads and landscaped open spaces and detailed models of buildings from given set of drawings.

TEXT BOOKS/REFERENCE BOOKS:

1. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000

2. Sutherland, Martha, " Model Making: A Basic Guide", W.W. Norton and Co, 1999

3. Mills, Criss B., "Designing with Models : A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000

Course outcomes:	
1.	Basic skills for preparing architectural models and art project while in calculating value for good craftsmanship.

Course code ARC-168	Course title COMPUTER APPLICATION IN ARCHITECTURE-II	L	T	P	Credits
		1	0	2	2

Course Objectives:

- The objective of introducing this course is to promote computer knowledge and applications in architecture.
- This course will familiarize the students to the concepts CAD and will enable them to present Computer Aided Architectural Drawings in both 2D & 3D.

COURSE CONTENT:- [42]

1. To introduce to the basics of CAD and the fundamentals of 2D drafting.
2. To introduce different 2D object drawing methods, editing objects and modifying their associated properties.
3. Exercises on text annotation and dimensioning, defining text and dimension styles.
4. To learn about the concept of blocks and object grouping; styles and organizing objects in layers.
5. To create and customize hatch patterns; introduction to symbol libraries.
6. To study drawing unit association, scaling, associating limits
7. To introduce the different View management techniques, Concept of UCS and Icon management
8. To introduce the concept of model space and organize drawings in custom layouts.
9. Exercises on the use of templates.
10. To learn about the database concepts, attributes and scripts, concepts of OLE
11. To learn about importing/ exporting files to and from CAD.
12. To learn printing and plotting using CAD.
13. To introduce Auto LISP.
14. To introduce the different types of 3D modeling techniques- Solid creation; Editing; Creating complex solids; Boolean operations on solids.
15. Exercises on shading – Rendering, Material mapping, Environment attributes

TEXT BOOKS/REFERENCE BOOKS:

1. Kyles, Shannon R., “AutoCAD Workbook for Architects and Engineers”, Wiley-Blackwell, 2008.
2. Saka, Tuna, “AutoCAD for architecture”, Prentice Hall, 2002

Course outcomes:	
1.	Basic drawing and editing commands for 2D drawings, application of Auto CAD commands.
2.	Advanced 3D drawings using Auto CAD, Use of layers and blocks exercise on simple working drawings

SEMESTER-III

Course code	Course title	L	T	P	Credits
ARC-201	HISTORY OF ARCHITECTURE III	2	0	0	2

Course Objectives:

- History of Architecture provides the connection, context, and roots central for the identity of who we were, who we are, and who we might be.
- Since architecture is a coherent chain of events, styles, tendencies, beliefs and techniques, studying history of architecture enables the student to gain a direct understanding of how and why architecture is made today, and clues to how architecture can be tomorrow.
- To introduce architectural vocabulary and provide an understanding of various architectural styles and their salient features.

UNIT-1: [6]

INDO-ISLAMIC ARCHITECTURE:

Introduction to Islamic culture in India, salient features of Islam, Islamic culture compared to other religions - Muslim invasion of India; socio-political influence;Building types: mosques, tombs; architectural character: spatial arrangements, structural system, constructional features, surface ornamentations, fenestration details; elements of special attributes: arch, dome etc.

UNIT-2: [6]

ISLAMIC ARCHITECTURE – IMPERIAL STYLE, PROVINCIAL STYLES & MUGHAL ARCHITECTURE:

Influences on Islamic Architecture - evolution of the Islamic Arch, salient features of an Indian mosque; development of the Imperial style by the kings of the Slave dynasty and the provincial styles in different regions – typical examples and characteristic features.

Development of the Mughal style under the different rulers - Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb; typical examples and salient features.

UNIT-3: [6]

ARCHITECTURE IN COLONIAL INDIA:

Styles and trends of architecture brought by Britishers to India and their evolution; characteristics of British colonial architecture; monumental buildings of the colonial period; architectural character of Indo-Saracenic and classical revival; Later colonial period: Contribution of Edwin Lutyens & Herbert Baker to the layout and architecture of New Delhi.

UNIT-4: [4]

THE TREND IN INDIAN ARCHITECTURE AFTER 1970:

Principles and works of Balakrishna Doshi, Charles Correa, Anant Raje, Raj Rewal and Laurie Baker with suitable examples.

UNIT-5: [6]

RENAISSANCE & POST RENAISSANCE ARCHITECTURE:

Birth of Renaissance and its impact on architectural style revivalism and synthesis of classical features; Churches, Palazzo, villa: spatial planning, construction and other architectural features; town planning principles; French and British Renaissance; High Renaissance and Mannerism.

Baroque architecture; works of Brunelleschi, Alberti, Bramante, Michelangelo, Palladio & Bernini, Inigo Jones; Arts and crafts and Art Nouveau movements and their impact on architecture; principles and works of Horta, Guimard, Macintosh and Antonio Gaudi.

Note: An educational tour/ study tour to the places of architectural interest / building appraisal shall be organized as per the programme. The documentation shall be done in the form of photographs / slides and sketches presented in form of a seminar and written report immediately after the tour / building appraisal.

TEXT BOOKS/REFERENCE BOOKS:

1. Brown, Percy, "Indian Architecture (Islamic period)", DB Taraporevala Sons & Co, Mumbai, 1983.
2. Hambly, Gavin, "Cities Of Mughal India", Ubs Publisher's Distributors, 1968

3.Grover,S, "The Architecture of India (Islamic)", Vikas Publishing House Pvt. Ltd., New Delhi, 1981.

4.Michell, G. "Architecture of the Islamic World (its history and social meaning)", Thames and Hudson, London, 1978.

5.Hillenbrand, Robert, "Islamic Architecture, Form, Function and Meaning", Edinburgh University Press,

6. Nath, R., "History of Mughal Architecture", Abhinav Publicaitons, New Delhi, 1985

Course outcomes:	
1.	Students will also know about the design variables, construction techniques materials and craftsmanship used in the historical buildings of this great country.
2.	The students will develop the ability to sketch plans, sections, elevations and other architectural details of heritage buildings in India.

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-204	**BUILDING SERVICE- I (Water supply & Drainage System)**	**2**	**0**	**0**	**2**

Course Objectives:
➢ It is imperative that architects and all those who are concerned with the construction of buildings have a knowledge and appreciation of the subject.

UNIT-1: [6]

WATER SUPPLY AT CITY AND BUILDING LEVEL: Demand of water for various purposes as per BIS standards, per capita demand , DETECTION OF leakage and wastage of water and its preventive measures; sources and method of water supply - BRIEF OF catchment areas, reservoirs, and their location; system of water supply-Continuous, intermittent, their advantages and disadvantages; water purification systems, control systems, supply for a neighborhood and town. Tapping of water; storage and distribution of water in premises; boosting water, gravity and pressure distribution by storage tanks of individual buildings; service connections, types and sizes of pipes, piping network, materials, joinery, water supply fixture and installations, installation of network both open and concealed; water supply for multi storied buildings.

UNIT-2: [4]

HOT WATER SUPPLY: Direct and indirect systems of hot water supply, their components and equipment's used for the same; insulation of piping work and safety devices; solar heating.

UNIT-3: [6]

SITE DRAINAGE AND SANITATION SYSTEMS: Site planning from drainage point of view; storm water drains, details of construction OF DRAINS, water entrances, gully Trapes, open drains, gradients, rainfall maintenance; storm water and roof drainage systems and their installations; underground drainage systems with application of ventilation, self cleansing velocity, laying of drains to required gradients and testing of drains. Study of sanitary fittings with reference to use, materials and functions; traps and their uses, classification of traps as per use and shape; pipes and piping systems, various types of vent and anti-siphonage systems, jointing and installations; disposal of sewage within the premises using septic tanks, inspection chambers, effluent treatment plants, their function and layouts; sewage and sewage treatment plants; connection of house sewers to municipal sewers, ventilation of sewers;

UNIT-4: [6]

SOLID WASTE DISPOSAL: Collection, treatment and disposal of organic and inorganic waste, urban solid waste treatment systems, traditional methods, garbage chutes, sanitary landfills, vermicomposting, incineration, pyrolysis-advantages and limitations etc; garbage disposal in multi – storied buildings, dry and wet treatment; treatment of industrial refuse; refuse and pollution problems

UNIT-5: [6]

DESIGNING PLUMBING AND SANITARY LAYOUTS: Designing of toilet blocks in residential buildings, showing both Indian and European W.Cs and in public buildings; preparation of working drawings showing complete details of fittings and plumbing required for water supply and drainage; with all required calculations.

Note: Assignments can be in form of compiling required information from site visits, market surveys and other sources.

TEXT BOOKS/REFERENCE BOOKS:

- Rangwala, S.C., “Water Supply and Sanitary Engineering”, Charotar publishing house.
- Shah, Charanjit, “Water Supply and Sanitary Engineering”, Galgotia publishers.
- Wise, A.F.E., &Swaffield, J.A., “Water Sanitary Services for Buildings”, Longman Scientific and Technical, Harlow, 1995.
- Greeno, Roger, “Building Services Technology and Design”, Longman Scientific and Technical, Harlow, 1997.
- Chatterjee, A.K., “Water Supply and Sanitary Engineering”, Khanna publishers, New Delhi, 1986.
- “Hand Book on Water Supply and Drainage (with special emphasis on plumbing)”, Bureau of Indian standards, New Delhi .

Course outcomes:	
1.	Knowledge of environmental support systems as they apply to human habitat, with special reference
2.	Students have thorough understanding on water supply and waste water management, in residential unit, small campus, commercial buildings.
3.	Students are aware of best practices for Solid waste management

Course code	Course title	L	T	P	Credits
ARC-203	BUILDING SCIENCES	2	0	0	2

Course Objectives:

- Architecture and climate have always been linked in a pattern of mutual influence. In its role as a provider of shelter, architecture intentionally modifies the climate of an immediate area – and traditionally, its design has been shaped by the stresses and opportunities inherent in the regional climate.

UNIT-1: [4]

CLIMATE &THERMAL COMFORT: Introduction to climate as a factor of human shelter, comfort and environment; its classification as global, macro and micro climate; elements of climate; thermal balance of the human body, thermal comfort indices: effective temperature, CET, comfort zone & calculation of overheated & under heated periods

UNIT-2: [6]

PRINCIPLES OF THERMAL DESIGN IN BUILDINGS: Thermal quantities: heat flow rate, conductivity (k–value) & resistivity, conductance through a multi-layered body, surface conductance, transmittance: calculation of U- value, convection , radiation , concept of sol-air temperature & solar gain factor; exercises in heat loss & heat gain in building assuming steady state assumption (thermal balance equation); periodic heat flow in building: time lag & decrement factor & its application in selection of appropriate materials for walls & roof; effect of insulation & cavity on time lag & its practical use

UNIT-3: [6]

VENTILATION & DAYLIGHTING: Functions of ventilation stack effect due to the thermal forces, wind velocity: wind rose diagram, wind pressure; air movement through building and around buildings; factors affecting indoor air flow, wind shadow etc.; The nature of light, its transmission, reflection, coloured light, the munsell system; photometric quantities, illumination, day lighting prediction, the daylight design graph

UNIT-4: [6]

SOLAR GEOMETRY & USE OF SOLAR ENERGY: Study of solar control with references to solar charts, sun path diagrams; methods of calculating and designing of shading devices; introduction to concepts of solar energy utilization in heating water such as Flat Plate collectors; introduction to use of solar energy in lighting in buildings such as Photovoltaic cells; solar passive strategies-Principals of natural light and natural ventilation.

UNIT-5: [6]

DESIGN FOR CLIMATIC TYPES& GREEN BUILDING CONCEPTS: Study of analysis of climatic zones in India along with data analysis; design strategies for Indian climate zones - building design & lay out planning consideration; study of climatic zones along with traditional dwelling units; study measurement and analysis of micro climatic elements and its use for a Designer; Introduction to the concepts of green buildings and energy conscious architecture; introduction to ECBC rules, Energy audit and Green buildings rating eg. TERI Griha, LEED etc.

NOTE: Assignments can be in the form of:

1. Exercises on achieving the required indoor temperature by varying the components of composite materials according to the U values.

2. Exercises on design of small buildings for various climates

TEXT BOOKS/REFERENCE BOOKS:

1.Koenigsberger & Ingersol, "Manual of Tropical Housing and Building: Climatic Design", Universities Press,

2.Evans, M., "Housing, Climate and Comfort", Architectural Press, 1980

3.Arvind Krishan et al, "Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings", Tata McGraw Hill, 1999.

4.Givoni, B., "Man, Climate and Architecture", Elsevier Publishing Company Limited, 1969.

5.Watson & Labs, "Climatic Design", Mcgraw Hill, NewYork, 1983.

Course code	Course title	L	T	P	Credits
CEA-211	STRUCTURES IN ARCHITECTURE III	2	0	0	2

Course Objectives:

- To introduce the basic concept of steel structures and enable the students to analyze, understand the fundamentals and working of various parts of these structural systems.

UNIT-1: [6]

MODULE 1: STEEL STRUCTURES: Types of steel structures, Framed and Shell structures, Properties of Indian standard rolled steel section; useof IS 800 and steel tables; permissible stresses in tension, compression and shear.

UNIT-2: [4]

MODULE 2: CONNECTIONS: Welded and riveted connections–types of failure; design ofwelded and riveted connections for members subjected to axial forces

UNIT-3: [6]

MODULE 3: TENSION AND COMPRESSION MEMBERS: Steel structures –Tension and compression members; design of single angle and double angle sections in tension; design of compression members; slenderness ratio; design of simple and compound sections; design of lacings and battens.

UNIT-4: [6]

MODULE 4: BEAMS: Principal Stresses, allowable stresses, General specifications, Designof laterally supported beams.

UNIT-5: [6]

MODULE 5: STEEL ROOF TRUSSES: Types of roof trusses–Selection of trussesaccording to the span; estimation of gravity loads and wind loads; use of BIS and book SP-38 in analyzing and design of trusses, gusseted plate connections.

TEXT BOOKS/REFERENCE BOOKS:

1.Ramachandra .S, "Design of Steel Structures Vol. I", Standard publication, New Delhi, 1992

2.Arya .A.S and Ajamani .J.L, "Design of Steel Strctures", Nem Chand and Bros, Roorkee, 1999

3.Design of Steel Structures by S.Ramamruthan

4.Vazirani .V.N, and Ratwani .M.M, "Steel structures", Khanna Publications, New Delhi, 1995

5.Duggal, "Design of Steel structures", Tata McGraw Hill Company, New Delhi, 2000

6.Dayaratnam .P, "Design of Steel Structures", Wheelers Publishing Company Co. Ltd, 1990

7."Handbook of Typified Designs for Structures with steel roof trusses, SP 38 1987", BIS, New Delhi,1987

Course outcomes:	
1.	Development of the basic understanding of the forces & its effects in simple building structural systems in Steel
2.	Knowledge about the structural behaviour of various roof configurations & built form is also gathered.

Course code	Course title	L	T	P	Credits
ARC-255	ARCHITECTURAL DESIGN- I	2	0	6	5

Course Objectives:

- To introduce the students to the various approaches to design process and to impart understanding of a range of design parameters related to site conditions, social aspects, user groups along with functional and aesthetic aspects

COURSE CONTENT:- [112]

IMPORTANCE OF LITERATURE AND CASE STUDIES IN THE DESIGN PROCESS:

Study of a given space through elementary measured drawings, sketching and photography. At least one project to study, analyze and compare private residential typologies and/or a small building of public use with respect to the spaces, their inter-relation, scale, ambience, technology and material for construction etc. e.g. Havelis, apartments, bungalows, row houses etc Synthesis of observations of case studies in design of an architectural form with a specific function

CLIMATE RESPONSIVE ARCHITECTURE

Design of a simple building for public activity incorporating elements of thermal comfort, ventilation, day lighting and design for various climatic types e.g. moderate, hot & humid, cold & hot climate considering the social and physical environment and methods of construction like timber construction emerging out of the traditional way of life of the people of the given place. This introduction to other role players in the architectural processes i.e. the client and the user. E.g. Architect House, Resort, Post Office, Bank etc.

Course outcomes:	
1.	The students will endeavour to acquire an understanding of the determinants of the built form such as social imperatives, environmental concern and craft of building.
2.	The student develops the ability to successfully design independent residential buildings in urban areas with concepts that respond to personal preference & taste, family lifestyle, culture & site conditions.
3.	Derivation of concepts and strategies will then lead to deliberate responses in the shape of a specific design proposal with the help of organizational and communicative skills.

Course code	Course title	L	T	P	Credits
ARC-256	BUILDING MATERIAL & CONSTRUCTION -III	1	0	4	3

Course Objectives:

- To give an introduction to building elements and expose the student to the process of building construction

COURSE CONTENT:- [70]

1. To introduce the various terminology of staircases.
2. To study and prepare drawings of various types of timber staircases- single, double (Dog legged and open well) and Triple flight stairways in stone and timber.
3. To design handrail and balusters using different materials and study the various methods of fixing them.
4. To prepare drawings on details of joints in timber staircases.
5. To prepare drawings on the different types of timber floors- Single, double and framed floors with joints between joist with wall plate.
6. To prepare drawings on the different types of timber floors- Single, double and framed floors with joist with beam and sub beam with main beam.
7. To study strutting of joists.
8. To study various terminologies and prepare drawings on the classifications of timber roofs.
9. Study of timber trusses: King post and queen post trusses with details of joints.
10. To prepare drawings on Built-up and Composite roof truss.
11. Study of different sheet roof covering material viz. asbestos cement, galvanised iron, aluminium, asphaltic, fibreglass reinforced plastic, polycarbonate and other, along with fixing details.
12. To prepare drawings on the detail of eaves projection with soft boarding and alternative detail of gutter at eaves etc.
13. To study the different types of partitions and their properties.
14. To prepare drawings on Joinery details and constructional techniques involved in timber partitions, single and double skinned partitions, partially glazed partitions.
15. MATERIALS FOR FLOORING AND ROOFING : Different flooring & paving materials and types that are cast-in-situ viz. Mud flooring, Brick flooring, Indian Patent Stone finish, Terrazzo flooring, red oxide flooring etc. and readymade tiles available in market viz. natural stone tiles / slabs, plain & mosaic cement tiles / blocks, ceramic tiles, vitrified tiles and other modern materials, including the process of providing or laying the flooring or pavement; floor finishes of various materials viz. carpet, linoleum, rubber, PVC etc. : Roofing of Mangalore tile, pan tiles, slate, corrugated asbestos sheet etc.
16. DAMP PROOFING, WATER PROOFING AND MISCELLANEOUS**:** Hot applied and cold applied; emulsified asphalt, bentonite clay, butyl rubber, silicones, vinyls, epoxy resins and metallic water proofing materials, their properties and uses; water proofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber- vinyl, butyl rubber, neoprene, polyvinyl chilnide; prefabricated membranes sheet lead, asphalt their properties and uses. Anti termite treatment to foundations, masonry and wood work; sound insulating materials- gypsum; recent advances in building materials.

Note: Sessionals will be in the form of reports, drawings and models. There shall be regular visits to construction sites.

TEXT BOOKS/REFERENCE BOOKS:

1. Rangwala, S. C., “Building Construction”, Charotar Publishing House, 2007
2. McKay, W.B., “Building Construction Volume I, II, III and IV”, Longmans, 1955

3. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000
4. Barry, R**,** "The Construction of Buildings", The English Language Book Society and Crosby Lockwood, 1976
5. Chudley, Roy, "Construction Technology", Longman, 2005

Course outcomes:	
1.	Students will examine the critical role of materials and methods for the design and construction of buildings
2.	Students will get exposed to rural and traditional materials and their construction techniques.
3.	They learn to represent the different building components, Staircases, damp proofing & water proofing in various applications through relevant drawings.

Course code	**Course title**	**L**	**T**	**P**	**Credits**
ARC-257	**COMPUTER APPLICATIONS IN ARCHITECTURE - III**	**1**	**0**	**2**	**2**

Course Objectives:

- Communicating design concepts and project status to clients, regulators, and colleagues can be challenging.
- This course will enable the students to understand the basics of Photoshop, the professional image-editing standard
- Permitting the student groundbreaking new creative options to realize their vision and an unprecedented level of customization to streamline their workflow.

COURSE CONTENT:- **[42]**

1.To study the basics of Adobe Photoshop; Selection, Slice, Painting tools
2. To scan an image into Photoshop CS3; check the scan quality and resolution; crop the image to final size and orientation.
3. To adjust the brightness, contrast and tonal range of the image; sharpen the overall focus of the image etc
4. To learn working with Layers and use layers to create a logo or collage for a PowerPoint presentation.
5. Exercises on Basic and Advanced Retouching: - Color manipulations, - levels, curves, patch tool, cropping, special color effects: black and white, sepia, grainy
6. Exercises on designing simple Web Pages by using Slice Tool.
7. Exercises involving the designing of Logos by using Texts and Paints professionally.
8. To transfer CAD drawings into Photoshop while preserving graphic scale.
9. To enhance drawings using patterns, strokes, color overlays, fill layers, inner and drop shadows, clipping groups, adjustment layers etc
10. Exercises on rendering plans, elevation and sections using Photoshop
11. To render elements from 3ds Max as layers in Photoshop and learn how to create realistic auto-blending color-matched skies, greenery, trees etc
12. Exercises on rendering 3D views using Photoshop.
13. Presentation techniques for portfolio, design sheets etc using Photoshop

TEXT BOOKS/REFERENCE BOOKS:

1. Galer, M. & Andrews, P., "Photoshop CS3 Essential Skills", Elsevier, 2007
2. Sondermann, H., "Photoshop in Architectural Graphics", Springer, 2009

3. Alten, “Adobe Photoshop CS3: Classroom in a Book”, Peachpit Press, 2007

	Course outcomes:
1.	Exposure to CAD and Photoshop will help students to produce their operation and critical parameters.
2.	Presentations for large gatherings, corporate clients-using CAD drawings, pictures, 3D images, text etc

Course code	**Course title**	**L**	**T**	**P**	**Credits**
CEA-260	**SURVEYING**	**0**	**0**	**4**	**2**

Course Objectives:
➢ This course intends to make the student familiar with locating the object positions in horizontal and vertical plane with desired accuracy as needed for architectural profession and to prepare and interpret survey drawings.

COURSE CONTENT:- **[56]**

1. Standardization of pace length; to estimate horizontal distance by pacing; study of metric chain and long distance measurement by a chain.
2. Exercises on direct and indirect ranging.
3. Chain survey of given area
4. Study of prismatic and surveyor’s compass
5. Chain and compass surveying
6. To carry out fly leveling for establishment of a benchmark.
7. To carry out profile leveling for a proposed road and its cross section.
8. To carry out contour survey by square method.
9. To study plane table and its accessories and carry out plane table survey by radiation, intersection and by transversing methods.
10. To solve two and three point problems.
11. To find out Tacheometric constants of Dumpy level/ Theodolite.
12. To find out horizontal and vertical angle by Theodolite.
13. To carry out transversing by Theodolite
14. To practice Transiting, elongation of line, taking bearing and marking north direction on ground.

TEXT BOOKS/REFERENCE BOOKS:

1. Basak, “Surveying and Levelling”, Tata McGraw-Hill, 2004
2. Rangwala, “Surveying and Levelling”, Charotar Publishing House Pvt. Ltd., 2005
3. Punmia et al, “Surveying - Volume 1 & 2”, Firewall Media, 2005

Course outcomes:	
1.	Knowledge of interpretation and preparation of contour maps
2.	Site modeling with total station. Exercises in setting out of building works

SEMESTER-IV

Module 16 ARMO 2006		**M16: Vernacular**
Contacts Hours		**50 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-271	Architectural Design-IV	15
ARC-210	History of Architecture-IV	10
ARC-214	Building Services-III	40

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyze concepts of vernacular architecture in different regions of India	K4 in Cognitive domain	Rubric/Viva
2	Apply basic principles of acoustics in built environment	K3 in Cognitive domain	Rubric/Viva
3	Display professional commitment to ethical practice on every day basis	A5 in Affective domain	Rubric/Viva
4	Make scale models of various styles of vernacular architecture in groups	P5 in psychomotor domain	Rubric/Viva
5	Illustrate basic application of vernacular architecture in contemporary scenario	K3 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. Building services/acoustics as prerequisite
2. Human Values and professional ethics
3. Vernacular architecture in India-Sheets models and analysis

Project: Analysis of Vernacular Architecture of a Unique Climatic Zone in India

ARC-271 Architectural Design-IV

Elements of Vernacular Architecture- locality, context, water, light ventilation, wind, temperature, availability of material, skills and construction techniques. Study and analysis of vernacular architecture of various regions and climatic zones in India on the basis of given parameters.
Study of vernacular architecture, emerging out of the traditional way of life of the people in a given climatic context and region . Understanding how the social and physical environment, climate of the place, materials and methods of construction impact vernacular architecture.
Works of laurie baker etc.

ARC-210 History of Architecture-IV

History of Indian Vernacular Architecture – Documentaries etc.

ARC-214 Building Services III

Architectural Acoustic

Introduction to the study of acoustics – nature of sound, basic terminology – frequency, pitch, tone, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, masking, sound and distance – inverse square law. Behavior of sound in enclosed spaces. Absorption of sound, sound absorption coefficient, reverberation, reverberation time calculation, use of Sabine's and Eyring's formulae, sound absorbents, porous materials, panel or membrane absorbers and cavity

or Holmboltz resonators, role of functional absorbers. Absorption coefficients of indigenous acoustical materials, use of IS code 2526-1963.
Material- Internal finishing and details.

Books: Aishwarya Tipnis, Vernacular Traditions: contemporary architecture, The Energy and Resources Institute (TERI), 01-Jan-2012

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 17 ARMO 2007		**M17: Steel**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-271	Architectural Design-IV	10
ARC-272	Building Construction-IV	20
ARC-216	Building Structures-IV	35
ARC-268	Computer Application in Architecture-IV	25

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyze structural design of steel buildings	K4 in Cognitive domain	Rubric/Viva
2	Apply basic concepts of steel as a construction material	K3 in Cognitive domain	Rubric/Viva
3	Design an abstract (conceptual) form using steel as a building material	K6 in Cognitive domain	Rubric/Viva
4	Illustrate steel construction details	K3 in Cognitive domain	Rubric/Viva
5	Make a scale 3 dimensional model with steel	P5 in psychomotor domain	Rubric/Viva

COURSE OBJECTIVES

1.Create an Abstract form using steel as a material – innovative 3D form
2. All the construction details to be designed in steel –cladding, foundation, anchor, counterweights
3. Apply a function to the abstract form in human scale
4. Result in terms of model with humans and constructing details in steel, INSDAG brief

Project: Steel Abstract form(Library, Auditorium)
Sheets / Drawing in one of the methods below
Deliverables- Design based and Report on Pre- fabrication/ Pre- casting theories.

ARC-271 Architectural Design-IV
Design in Steel, Case studies of steel buildings, IS Codes of steel construction

ARC-272 Building Construction-IV

Unit 1: Structural Steel Works

Typical metal joinery - Mechanical (riveted & bolted), Soldering and Brazing and welding. Detailing of structural steel work – Beam to Column joint, Beam to Beam joint, Column Splice, Column Base, Roof Truss to Column joint. IS codes for steel members

Unit 2: Doors & Windows (Metals)

Mild steel L and Z section Pressed steel section. Steel windows, their types, various sections and elements used in construction / fabrication. Relevant IS Codes for steel doors & windows.

Unit 3: Shutters(OperationalMechanisms)

Complete understanding of operational mechanism (automatic and manual) of variety of Rolling shutters and Collapsible shutters.

Unit 4-Industrial Construction

Structural Steel Works: Portal Frame Construction, north-light truss and lattice girder roof with various roof coverings.

ARC-216 Building Structures-IV

Introduction of Steel structures. Types and grades of steels and types of steel members. Introduction of IS Code: 800. Steel structure components and joints. Safety measures for steel elements. How the structural assembly of steel structures differs for other structures. Applications of bolts, welds, steel plates

ARC-268 Computer Application in Architecture-III

Unit I- Mastering in Revit Architecture

Introduction, Modifying the view, Common tasks, System options, File locations, Spelling options, Settings,

Unit-2 Building the Model and Modify

Walls, Doors, Windows, Components, Architectural columns, Roofs, Ceilings, Floors, Openings, Model text, Model lines, Compound structure, Sloped surfaces, Stairs, Ramps, Railings, Adding and modify curtain wall. Attaching wall to roof, Modifying the entry deck, Modifying the roofs.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 18 ARMO 2008		M18: Decoding Patterns
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-271	Architectural Design-IV	35
ARC-272	Building Construction-IV	40
ARC-216	Building Structures-IV	65
ARC-210	History of Architecture-IV	45
ARC-269	Architectural Graphics-III	100

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyze patterns in built form and nature	K4 in Cognitive domain	Rubric/Viva
2	Illustrate architectural history from Vedic to Dravidian period	K3 in Cognitive domain	Rubric/Viva
3	Organize and plan a study trip	A4 in Affective domain	Rubric/Viva
4	Create an art installation based on patterns (art thesis)	K6 in Cognitive domain	Rubric/Viva
5	Illustrate construction details related to non-ferrous metals, GRC , UPVC, Plastics rubbers and asbestos	K3 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. Understanding patterns from city core to a room
2. Relation of space and form in different scales
3. Art thesis- report on the process of deriving the art form, inspiration, creativity, installation process etc. 2D patterns and explanation, study of architectural pattern, deriving a 3D pattern, 3D Art Installation
4. Study Tour on Climate responsive architecture

Project: Art Thesis/Mural
Issue/context based design study (deep dive studios)

ARC-271 Architectural Design-IV
Study of Hierarchy
In interiors, in building, in street in neighborhood. FiLVre ground, site analysis, site inventory.Study of the built environment and to develop a basic understanding of spaceandform.Looking at the immediate built environment and understanding its fundamentalcomponents and their impact on the surroundings. Analysis of Architects work and deciphering pattern in their work
Drawing techniques and methods.
Deep dive studios
Systems approach/ scientific approach to introduce significance of theoretical and philosophical dimensions in architecture.
• Objective knowledge vs. Subjective Ideas,
• Distinction of & relationship between Science and Philosophy
• Rational process and Empirical process
• Rules, Formulas, Principles and Theories.
• Accuracy vs. Indeterminacy in Design

• Analytic approach vs. Mimetic approach
• Old Architectural treatises in Europe and India

Study tour

City Core

ARC-272 Building Construction-IV

Building materials- Rubber, GRC, Ferro-cement, UPVC, Non-Ferrous Metals, Plastics, Asbestos, water proofing materials

ARC-210 History of Architecture-IV

Unit-I: Indus Valley Civilization and Vedic Period

Characteristic features of town planning and architecture of Indus Valley Civilization; City of Harappa, Mohanjodaro and Lothal, layout of domestic units & public facilities, building materials and construction technologies used.

The Vedic civilization; Layouts of Aryan Village, type of dwellings and building materials.

Unit-II: Jain & Buddhist Architecture

Evolution of Jain & Buddhist Architecture; Development by Ashoka, Hinayan & Mahayan styles of Buddhist architecture, Stupas, Monolithic Pillars, Rock cut architecture (Chaityas & Viharas), Monestries, Rock edicts, Gandhar style.

Unit-III: Evolution of Temple Architecture

Beginning of Hindu Temple Architecture under the LVptas and Chalukyas.

Architectural features of buildings/temples, construction technology, building materials of Chalukyan style; Early Chalukyan Architecture, Later Chalukyan Architecture. Evolution at Badami, Aihole and Pattadakal, examples such as Ladh Khan, Durga, MaleLVti, Papanath Temple.

Unit-IV: Developments in Temple Architecture

Architectural features of buildings/temples, construction technology, building materials of Indo Aryan Style; Orissa Style – Kalinga Style, Khajuraho Style, LVjrat & Rajasthan Style. Dravidian Style; Pallava Style, Chola Style, Pandya Style, Vijayanagar Style.

Late Pandya Style or Madura Style.

ARC-269 Architectural Graphics-III

Unit 1 History of Indian Art Lectures on outline History of Indian Art, from earliest times to Mauryan

Period. LVpta Period to Mughal Period, Company Style (British Period).

Renaissance in Indian art i.e. 19th century, Post-independence art of India. Contemporary arts and artist in India, Works of Abanindra Nath Tagore, Nand Lal Bose, Jamini Roy, Amrita Sher Gill, M.F. Hussain, Satish LVjral and S.H.Raza

Unit 2

Design of various objects. Designing of gate, grill, railing, jaali, in suitable materials.

ARC-216 Building Structures-IV

Principals of Steel Structure Design

Members under combined stresses: Beams and Columns

Book: Timeless way of Building and Pattern lanLVage by Christopher Alexander

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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Module 19 ARMO 2009		M19: Climate Responsive Architecture
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-271	Architectural Design-IV	40
ARC-272	Building Construction-IV	35
ARC-210	History of Architecture-IV	45
ARC-214	Building Services-II	60

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Internalize energy conscious concepts in built environments	A5 in Affective domain	Rubric/Viva
2	Design of hostel building based on principles of sustainability	K6 in Cognitive domain	Rubric/Viva
3	Create working drawings of a hostel building	K6 in Cognitive domain	Rubric/Viva
4	Construct and simulate a scale model of hostel building	P5 in psychomotor domain	Rubric/Viva
5	Illustrate Indian architectural history from Islamic to Colonial period	K3 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. To produce a set of working drawing and GFCs of project
2. Indian History of Islamic Architecture
3. Trip report
4. Climatology
5. Environmental Lab

Project: working drawing and GFCs of Hostel Building

ARC-271 Architectural Design-IV

Design of climate responsive hostel building, using passive cooling techniques and strategies taught during the module.

ARC-272 Building Construction-IV

Unit-I: Expansion Joints

Introduction to expansion joints, need and their types, design criteria as per IS codes, construction details at foundation, walls, floor and roof level. Study of materials used in their construction, filling and finishing.

Unit-III: Building Chemicals

Anti-termite treatment to foundation, masonry walls and wood work (pre-construction) water proofing and weather proofing materials like chemical admixtures and surface applications, sealants for water, smoke and fire proofing. Pest & rodent control treatment.

Unit-III: Interior Materials & Details

Types & Details of Internal Partition & False Ceiling systems.

Design and detailing of wardrobes, modular kitchens, cabinet shelves and show cases for residence, offices, book stores and commercial buildings, work stations using materials like plywood, PVC, marble, granite, cement, fiber board, gypsum products, particle board, wood wool, straw and any other materials introduced in the market.

ARC-210 History of Architecture-IV

Unit-I: Introduction to Islamic Architecture
Introduction and understanding of "Islam's" philosophy and its interpretation in building types – Mosque, Tomb, Fort and their elements like dome, arches, minarets etc. Typical Layout of Mosque, its features and related nomenclature. Islamic Architecture Worldwide – Persia, Turkish, Arabian and their typical features

Unit-II: The Imperial Style
With reference to the Slave, Khalji, Tughlaq, Sayyid & Lodi Dynasties. Explanation withexamples of the buildings, construction technology, building materials used, evolution of form anddevelopment with significant changes over the time period.

Unit-III: The Provincial Style
Architecture at Punjab & Bengal, LVjrat, Bijapur, Jaunpur, Malwa and Deccan. Explain withexamples of the buildings, construction technology, building materials used, evolution of form anddevelopment with significant changes over the time period.

Unit-IV: Mughal Architecture
Concepts of city planning of various Islamic towns like Shahajahanabad and Fhatehpur Sikri. The Architecture developed under the rein of Babur, Humanyu, Akbar, Shahajan Period and later Mughal period and its implication on Indian traditional architecture.Explain with examples of the buildings, construction technology, building materials used,evolution of form and development with significant changes over the time period.

Unit V: Colonial Architecture
Colonial architecture and its amalgamation into India Architecture.

ARC-214 Building Services II

Unit 1 Electrical Illumination Introduction –
Terminology and unit. Light and its characteristics – scattering, propagation, transmission,reflection, absorption, refraction and dispersion of light. Electromagnetic spectrum and visible radiation.

Illumination –
Types of illumination schemes e.g. Ambient, Task, Focal and Decorative etc. lighting. Design considerations for illumination Schemes. Methods for lighting calculation – Watts per square meter, Light flux and Point to point method.

Sources of light (Electrical) –
Familiarization and understanding of electrical sources of light e.g. Thermal radiators- Incandescent, Halogen. Discharge lamps – Low pressure (fluorescent, compact fluorescent, sodium, cold cathode neon), High pressure (mercury, metal halide, sodium). New technologies - LED, Fiberoptics.

Luminaries –
Types of Luminaries – Indirect, Semi-indirect, General diffusing, Semi-direct and Direct.

APPLICATION

Electrical Drawing The understanding of electrical needs for individual spaces e.g. Living room, Dining room, Bed room, Kitchen, Toilet, Staircases, and Corridors etc. The electrical layout drawing for a residence.

Field / Market
Surveys
Familiarization to types of electrical luminaries available in market, manufactured by various brands e.g. Recessed mounted luminaries, Spot / Projectors, Surface mounted luminaries, Decorative luminaries, Pendant luminaries, Free-floor-standing luminaries, Up lights, Trunking lighting systems, Down Lights.

Module 20 ARMO 2010		M20: Facade
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-268	Computer Application in Architecture-IV	75
ARC-272	Building Construction-IV	05
ARC-215	Estimation and Costing-I	100

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Relate outer surface of buildings with its structure for performance improvement	K6 in Cognitive domain	Rubric/Viva
2	Create a building façade	K6 in Cognitive domain	Rubric/Viva
3	Analyze Glass as Building material	K4 in Cognitive domain	Rubric/Viva
4	Appraise manufacturing and processing of glass through industrial visit	K5 in Cognitive domain	Rubric/Viva
5	Justify the role of facade system in built environment	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project: Building skin section design

Lectures from Glass academy/ MOOC to be incorporated.

ARC-272 Building Construction-IV

Unit-I: Glass & Glazing

Introduction to Glass as building material, history of glass, manufacturing and properties of various types of glass like plate, tinted, decorative, reinforced, laminated glass block, fiber glass, glass murals, partially coloured glass, etching of glass and its applications in building industry for both exteriors and interiors. Glass fabrication techniques.

Application of glass in buildings, types of glazing, fixing methods, related hardware and construction details of glass curtain wall and structural glazing.

ARC-215 Estimation and costing-I

Unit-I: Procedure of Estimation

Introduction to Building Estimate and its need, importance of estimation, types of estimates, mode of measurement of various items.

Procedure of estimating and preparation of Bill of Quantity (BoQ) – Method of building estimates; estimation of earth work, PCC, brick work, DPC, RCC works, plastering, stone and tile works, wood work, water supply and sanitary work. Estimating of quantities of materials like cement, sand, aggregate, brick, reinforcement, tiles, structural steel for trusses, paints used in building, ACP, paneling and cladding, joinery etc.

Unit-II: Specifications

Brief and detailed specification (conforming to IS codes) for all items of works in the construction of a compound wall, septic tank, load bearing residential building, RCC framed office building, factory

building with truss, etc; Specification of special items like false ceiling, decorative elements, flooring, wall cladding etc.

Unit-III: Analysis of Rates

Definition; method of preparation; quantity and manpower estimate for unit work.

Analysis of rates for items in building works like earth work, concrete works, first class brick work, reinforced brick and concrete work, cement plastering, DPC with cement mortar/ concrete, finishing (cement paint, distemper, acrylic emulsion, enamel paint) to walls & ceiling.

Local Schedule of Rates, market rates, measurement book, Running Account (RA) bill, interim and final certificate.

ARC-268 Computer Application in Architecture-IV

Modeling With Energy Simulation Software

Ecotect and E-Quest

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SEMESTER-V

Module 21 ARMO 3001		**M21: Congent 1**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-358	Architectural Design-V	15
ARC-305	Theory of Design	65
ARC-306	Building Structures-V	20

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Design an art gallery	K6 in Cognitive domain	Rubric/Viva
2	Appraise renowned architects work to understand their design philosophies	K6 in Cognitive domain	Rubric/Viva
3	Appreciate various design styles and movements	A3 in Affective domain	Rubric/Viva
4	Make a scale model of art gallery	P5 in psychomotor domain	Rubric/Viva
5	Develop his own Philosophy/Rational thought process	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1. To study various philosophies in and philosophers in popular literature
2. Congent – Clear, logical and convincing

Project: Art Gallery

ARC-358 Architectural Design-V

Philosophy and Philosophers

Idea of challenging the norm, questioning and analyzing the philosophies, manipulation and debate. Learning through Videos on sociology

Following philosophers shall be studied individually and discussed – Plato, Aristotle, Immanuel Kant, Karl Marx, Michel Focault, Jacques Derrida, Friedrich Nietzsche, Rene' Descartes, David Hume, Jean Paul Sartre, Martin Heidegger, Socrates, Confucius

Popular philosophers in Architecture – Patric Schumarker, Christopher Alexander, Charles Jenx, Kevin Lynch, Jane Jacobs

Design Evaluation and Criticism: Value judgments in design, Appreciation of designer's skills, theories of perception and variability of perception. Theoretical issues in contemporary architectural though, Seminars on the works of selected Indian and International architects and related topics.

Part 1 - Exhibition of the study and analysis

ARC-305 Theory of Design

Modern Architecture Social intentions and search for ideal world. Pluralism in place of past unity of styles. Search for paradigms in historical sources: It return to fundamentals and origins in geometry, nature and paradigms of technology.

Expressions of construction and technology. Equating technology and progress with present. Functionalism and functional appropriateness. Thoughts and works of Frank Lloyd Wright, Walter Groupies, Le Corbusier, Miesvan der Rohe, Alvar Aalto, Louis Kahn, Dutch De Stijl Italian futurists and Russian Constructivists. International style: Oversimplification of the modern Movement into functional, steel and glass, cubes. Monotonous functionalist abstractions and Modernism as a style.

Disenchantment of modern cities and fall of modern Movement.

Post Modern Architecture

Post modern architecture as a revision of modern architecture and resistance to functional containers of 60's. Objective, representational and emphasis on content. Pluralistic and differing trends.

Post Modern – Historicism

Rooted to place and history. Regards of expression: ornaments, symbolism and context with irony and humour, exemplified through the works of James Stirling, Michael Graves, Charles Moore, Arata Isozaki.

ARC-306 Building Structures-V

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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Module 22 ARMO 3002		**M22: Congent 2**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-358	Architectural Design-V	15
ARC-306	Building Structures-V	20
ARC-305	Theory of Design	35

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Design an art gallery	K6 in Cognitive domain	Rubric/Viva
2	Appraise renowned architects work to understand their design philosophies	K6 in Cognitive domain	Rubric/Viva
3	Appreciate various design styles and movements	A3 in Affective domain	Rubric/Viva
4	Make a scale model of art gallery	P5 in psychomotor domain	Rubric/Viva
5	Develop his own Philosophy/Rational thought process	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1. Develop and understanding of architectural theories and act of being in time
2. Analyze and learn from master architects philosophies
3. Incorporate Philosophies in their work

Project: Art Gallery

ARC-358 Architectural Design-V

Design of an Art Gallery based on the Philosophies studied

Theory of Architecture

Digitalization, utopia, deconstruction, fluidism, parametric design, morphism, modernism, classicism, minimalism, regionalism, brutalism, blobitecture, schism, expressionism, cubism, duality

Architects Work

Frank Lloyd Wright, Le Corbusier, Hassan Fathy, Piter Issenman, Mario Botta, Nervey, Renzo Piano, Richard Roger, Santiago Calatrava, Ebenzer Harvard, Richard Mier, Ciser Pelli, Felix, Bernard Tshumi, Zaha Hadid, Ero Saarinen, Charles Correa, B V Doshi, Raj Reval, AP Kanvinde

ARC-359 Building Construction-V

ARC-306 Building Structures-V

ARC-305 Theory of Design

Neo - Modern Disregard historical imaginary to recapture ideas for modern architecture of 20's. Hi-tech metal abstractions of Richard Rogers, Normal Foster, showing structure and equipment as implied ornament. References of Russian Constructivists. The early works of New York Five including later works of Richar Mier as complicated, exaggerated and sophisticated revival of the modern grid and Corbusier's geometry. Synthesis of Hi-Tech and Historicism in the works Aldo Rossi, Mario Botta, Cesar Pelli.

Deconstructive Narrative and representational. Sources in Russian Constructivism. Non perfection in the works of Frank Gehry, Peter Eisenman, Bernard Tschumi, Daniel Libeskind, Questioning traditional purity of form, geometry and structure.

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Module 23 ARMO 3003		**M23: Dionysia**
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-358	Architectural Design-V	35
ARC-359	Building Construction-V	40
ARC-357	Computer Application in Architecture-V	15
ARC-306	Building Structures-V	60
ARC-303	Building Services-III	50

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyze large span roof forms	K6 in Cognitive domain	Rubric/Viva
2	Design an auditorium	K6 in Cognitive domain	Rubric/Viva
3	Apply the principles of acoustics in design of auditorium	K6 in Cognitive domain	Rubric/Viva
4	Compose a drama script and enact the same in groups	P6 in psychomotor domain	Rubric/Viva
5	Illustrate architectural history from modern to Contemporary period	K3 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. Scripting, Acoustics, performance, Set design, Video Making, Lighting and sounds, VR, Temperature control, AC control, Camera setting
2. Develop script, drama performance, apply history of, Auditorium design, apply acoustics

Project: Auditorium/theater

ARC-358 Architectural Design-V

Dramatics, Introduction to designing of performance space-auditorium, theatre, cinema hall types on an intermediate scale.Importance of space programming, case studies and site analysis in architectural design.

Importance of culture/traditions, and building byelaws in shaping built forms. Developing roof forms for large span structures, Angle of vision, types of Auditorium, Cinema Hall, Performance space.

ARC-359 Building Construction-V

Interior cladding/ thermal performance standards, interior insulating assemblies, sound absorbers, reflectors etc. Interior Finishes.

ARC-306 Building Structures-V

Unit-I Introduction to Shear and Development Length in Beams

Understanding of Shear stress, Diagonal tension, Shear reinforcement, Spacing of shear reinforcement, Problems of shear reinforcement, Development length, Anchorage bond, Flexural bond.

Unit-II Analysis & Design of R.C.C. Beam (Simply Supported & Cantilevered)

(Limit State Method) Analysis & Design of R.C.C. singly reinforced & doubly reinforced rectangular and flanged (L & T) beam sections.

Analysis & Design of R.C.C. Beam (Continuous).

(Limit State Method) Analysis & Design of R.C.C. continuous Beam.

Analysis & Design of R.C.C. Flat Slab.

(Limit State Method) Analysis & Design of R.C.C. flat slab.

Analysis & Design of R.C.C. Cantilever

Retaining Wall (Limit State Method) Introduction, Type of retaining walls, Analysis & Design of Cantilever retaining walls and detailing of its reinforcement.

Unit-III Analysis & Design of R.C.C. Stairs (Limit State Method)

Introduction, Types of stairs, Effective span of stairs, loading on stairs,

Analysis & design of stairs (dog legged with waist slab) and detailing of its Reinforcement.

ARC-357 Computer Application in Architecture-V

Introduction to Rhino

ARC-303 Building Services-III

Acoustics:

HVAV Application

Unit 1

Acoustical Design The understanding the audio needs and layout for projects e.g. Auditoriums, Cinema halls, Conference rooms etc.

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Module 24 ARMO 3004		M24: Decor
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-358	Architectural Design-V	35
ARC-359	Building Construction-V	60
ARC-304	Estimation and Costing-II	50
ARC-303	Building Services-III	50
ARC-357	Computer Application in Architecture-V	10

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concepts of interior design	K3 in Cognitive domain	Rubric/Viva
2	Design interior of a restaurant	K6 in Cognitive domain	Rubric/Viva
3	Design a commercial kitchen	K6 in Cognitive domain	Rubric/Viva
4	Create furniture elements	K6 in Cognitive domain	Rubric/Viva
5	Estimate the cost of interiors in a built structure	K5 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. Interior environment, theme, ambience, material, color, texture and its impact on human psychology and behavior. Performing market surveys, soft furnishing and upholstery, floor finishes etc.
2.

Project:Restaurant interiors / office interiors/ Hotel room/ Lobby

ARC-358 Architectural Design-V

Introduction to Interior Design

Definitions related to interior design. Review of enclosing elements like walls, floors, ceilings, openings, staircases, furniture & design elements such as color, light textures in interior spaces. Principles of interior design.

History of Interior & Furniture Design

Concise understanding of evolution from ancient to modern, post-modern ideologies to contemporary (Egyptian, Greek, Roman, Gothic, Baroque, Renaissance, Arts and Crafts Movement, Art Nouveau, De Stilj, Modernism, Post Modernism and Contemporary).

Study of Materials, Finishes & their applications in Furniture & other Interior Elements

An in-depth understanding of the characteristics and workability of various materials used in interiors. Their classification could be on basis of elements of usage (floor, ceilings, walls, doors, windows and fabrics/upholstery) or materials based like wood, metal plastics and their variants.

Understanding innovation in Furniture & Interior Design

Modern materials, Modular furniture, interior landscaping, Fittings & fixtures.

Analysis & Design of Furniture

Analyzing existing designs of selected furniture on basis of ergonomics, user type, economics, material, joinery and maintenance to ascertain their suitability. Design furniture for specific use complying with the aforementioned formulated design criteria. Build scaled models of the designed furniture for better understanding of working and materials.

Analysis & Design of small Interior spaces

Analyze small selected interior spaces like study, bedroom, executive/ architect office, retail outlet, conference, reception & waiting lobby including toilets and kitchens in detail, for varied aspects like function, ergonomics, and materials and establishing detailed design criteria. Design of selected small interior spaces on specific sites/ locations based on formulated design criteria using modern design methodologies. Develop design details of the afore-designed projects for their furniture and finishing.

ARC-359 Building Construction-V

Introduction to Aluminum as building material, advantage and disadvantages, study of various sections available for doors and windows together with accessories. Aluminum framed doors, windows & partitions types, design and construction details.Preparation of variety of surfaces, Application of various coats.

Finishes

Lime / Color wash, Dry distemper, Oil bound distemper,Cement paints, Acrylic emulsions, Synthetic enamels, Wall textures etc. Polishes and Varnishes

ARC-357 Computer Application in Architecture-V

Rendering of interior Views

ARC-303 Building Services-III

Advanced Building Services with respect to Commercial Interors

ARC-304 Estimation and Costing-II

Interior estimation only (to be revised)

Unit-I: Procedure of Estimation

Introduction to Building Estimate and its need, importance of estimation, types of estimates, mode of measurement of various items. Procedure of estimating and preparation of Bill of Quantity (BoQ) – Method of building estimates;

estimation of earth work, PCC, brick work, DPC, RCC works, plastering, stone and tile works, wood work, water supply and sanitary work. Estimating of quantities of materials like cement, sand, aggregate, brick, reinforcement, tiles, structural steel for trusses, paints used in building, ACP, paneling and cladding, joinery etc.

Unit-II: Specifications

Brief and detailed specification (conforming to IS codes) for all items of works in the construction of a compound wall, septic tank, load bearing residential building, RCC framed office building, factory building with truss, etc; Specification of special items like false ceiling, decorative elements, flooring, wall cladding etc.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 25 ARMO 3005		M25: BIM
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-357	Computer Application in Architecture-V	75
ARC-304	Estimation and Costing-II	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Analyze interior specifications	K4 in Cognitive domain	Rubric/Viva
2	Analyze interior estimation and costing	K4 in Cognitive domain	Rubric/Viva
3	Create a project report of Ground+1 brick residence	K6 in Cognitive domain	Rubric/Viva
4	Apply basic concepts of building information modeling software	K3 in Cognitive domain	Rubric/Viva
5	Model a DPR in BIM software	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.Create a project report of Ground+1 brick residence in BIM

2.

Project: Interiors rendering

COURSE OBJECTIVES

1. To introduce the fundamentals of Building Information Modeling (BIM).
2. To learn various workflows and procedures of BIM work-environment.
3. To develop basic skills in application of BIM tools and techniques in Architecture.

COURSE CONTENT

ARC-357 Computer Application in Architecture-V

Unit-I: Introduction to BIM

Introduction to BIM, Concepts & Principles, User-Interface, Viewing the Model, Resources. Understanding terms, elements and properties. Creating a project in BIM environment, creating levels and grids, creating conceptual design.

Unit-II: Basic Modelling

Modelling of walls, windows, doors, setting view range, components, columns, roof, ceiling, floors, openings, surfaces, stars, ramps, railings, curtain elements.

Understanding families and working with families, family editor, creating a component, in-place components, reference planes, voids, join/cut geometry. Rooms and areas.

Unit-III: Annotation and Visualization

Annotations; grids, dimensions, text, tags, rooms, schedules, sheets, symbols, creating views. Setting of colour schemes, legends, openings.

Visualization; rendering, materials, lights, paint tool, decals.

Project phasing, detailing and preparing construction documents.

Unit-IV: Site and Solar Studies

Site, topo-surface, building pads, divided surface, creating topo-surface from CAD contours, massing studies. Setting up and creating solar studies. Applying and removing constraints.

Unit-V: Maya/ Rhino/ Grasshopper
3D Max, Lumion or any other rendering software.

ARC-304 Estimation and Costing-II

Unit-III: Analysis of Rates
Definition; method of preparation; quantity and manpower estimate for unit work. Analysis of rates for items in building works like earth work, concrete works, first class brick work, reinforced brick and concrete work, cement plastering, DPC with cement mortar/ concrete, finishing (cement paint, distemper, acrylic emulsion, enamel paint) to walls & ceiling. Local Schedule of Rates, market rates, measurement book, Running Account (RA) bill, interim and final certificate.

Accounting Procedures Introduction to P.W.D accounts procedure, measurement book, daily labour,
muster roll, stores, stock, and issue of material from stock, indent form,
imprest account, cash book, mode of payment.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SEMESTER-VI

Module 26 ARMO 3006		**M26: Prefab**
Contacts Hours		**50 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	15
ARC-371	Building Construction-VI	30

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyze defects and remedies in buildings	K4 in Cognitive domain	Rubric/Viva
2	Analyze retrofitting in buildings	K4 in Cognitive domain	Rubric/Viva
3	Analyze prefabricated speedy construction in a building	K4 in Cognitive domain	Rubric/Viva
4	Apply basic concepts of modular construction	K3 in Cognitive domain	Rubric/Viva
5	Appreciate the role of prefab construction in respect of technology, culture, time and environment	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1. To develop and include universal design principles
2. Designing in light weight construction – concrete, pre tensioning, post tensioning
3. Defects and remedies

Project: Analysis of buildings constructed through speedy construction

ARC-370 Architectural Design-VI

Defects in Building

Analyze defects in building and understanding the role of advanced construction techniques. Defects in buildings and their remedies.

Universal Design- People needs

Principles of Universal Design,Universal Design Definition, seven principles:-Equitable Use Flexibility in Use, Simple and Intuitive, Perceptible Information, Tolerance for Error, Low Physical Effort, Size and Space.

ARC-371 Building Construction-VI

Unit1-Prefabrication Systems

Open prefab system, large panel prefab system, joints, pre-casting methods, materials, on-site and off-site prefabrication, components, etc.

Unit 2-Pre-stressed Concrete

Introduction, methods of pre-stressing and their application to large-space structures.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 27 ARMO 3007		M27: Tall Buildings
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	10
ARC-371	Building Construction-VI	15
ARC-314	Human Values	80
ARC-372	Building Structures-VI	25

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Design core of a tall building	K6 in Cognitive domain	Rubric/Viva
2	Analyze structural system of a tall building	K4 in Cognitive domain	Rubric/Viva
3	Illustrate evolution of mega structures	K3 in Cognitive domain	Rubric/Viva
4	Analyze building on the basis of earthquake and dynamic loads	K4 in Cognitive domain	Rubric/Viva
5	Appreciate the role of services in tall building design	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

To design tall building core, earthquake resistant structures, structural grids- diagrid, tensegrity, fire proofing, historic evolution of tall buildings, contemporary mega structures

Project: Design core of a Tall Building

ARC-370 Architectural Design-VI

Documentaries of Megastructures for analysis of high rise structures. Understanding structural grids, form geometry

ARC-371 Building Construction-VI

Industrial Construction Structural Steel Works:Portal Frame Construction,
Construction for tall buildings

ARC-372 Building Structure-VI

UNIT 1 INTRODUCTION TO HIGH-RISE BUILDINGS AND STRUCTURAL SYSTEMS

Height analysis, plan shapes, grids and core design - Foundations and soil conditions - Construction sequencing, building skin and envelope - Design philosophy, structural loading, sequential loading, materials, high performance concrete – Fibre reinforced concrete, High strength concrete, Light weight concrete - Loading and movement Gravity Loading, Dead and Live load - Methods of Live load reduction – impact, gravity loading, construction loads, wind loading – Static and dynamic approach – Earth quake loading – Equivalent lateral force, model analysis, combinations of loading – Working stress design, limit state design, plastic design - Codes & Standards - Tensile structures in high-rise.

UNIT 2 BEHAVIOR OF VARIOUS STRUCTURAL SYSTEMS

Factors affecting growth, height and structural form – High rise behavior, rigid frames, braced forms, infilled frames, shear walls, coupled shear walls, wall frames, tubular, cores, outrigger-braced and hybrid mega systems.

UNIT 3 DISASTER RESISTANT STRUCTURES

Overall buckling analysis of frames, wall frames - Approximate methods, second order effects of gravity of loading, simultaneous first order and P delta analysis, translational, torsional instability, out of plumb effects, stiffness of member in stability, effect of foundation rotation - Case study of a high-rise structure with 3D model analysis.

UNIT 4 PREFABRICATED STRUCTURES

Specific requirements for planning and layout of prefabricates plant, IS code specification - Design Principles, modular coordination, standardization, disuniting of prefabricates production, transportation and erection, stages of loading and code provisions, safety factors - Reinforced concrete - Prefabricated structures, wall panel types and two way fabricated slabs, partial and curtain walls, trusses, shells, crane - gantry systems - Floor slabs and roofs, types of floor slabs, cored and panel types and two way systems, stair case slab , insulation requirements, joints, their behavior and reinforcement requirements – Walls, types of wall panels blocks and large panels, curtain – Partition and load bearing walls, wall joints - Behavior and design, leak prevention, joint sealant, sandwich wall panels.

ARC-314 Human Values

UNIT 1: Course Introduction - Need, Basic LVidelines, Content and Process for Value Education

1. Understanding the need, basic LVidelines, content and process for Value Education
2. Self Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in **harmony** at various levels

UNIT 2: Understanding Harmony in the Human Being - Harmony in Myself!

1. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
2. Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*
3. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
4. Understanding the characteristics and activities of 'I' and harmony in 'I'
5. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
6. Programs to ensure *Sanyam* and *Swasthya*

- Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

1. Understanding Harmony in the family – the basic unit of human interaction
2. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
    a. Trust (*Vishwas)* and Respect (*Samman)* as the foundational values of relationship

3. Understanding the meaning of *Vishwas*; Difference between intention and competence

4. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship

5. Understanding the harmony in the society (society being an extension of family): *Samadhan, Samridhi, Abhay, Sah-astitva* as comprehensive Human Goals

6. Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj),* Universal Order (*Sarvabhaum Vyawastha)*- from family to world family!

- Practice Exercises and Case Studies will be taken up in Practice Sessions.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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Module 28 ARMO 3008		**M28: Neighborhood**
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	40
ARC-372	Building Structures-VI	55
ARC-315	Building Economics	50
ARC-314	Human Values	20
ARC-368	Computer Application in Architecture-VI	30

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Apply basic theory of design	K3 in Cognitive domain	Rubric/Viva
2	Analyze advance structural concepts	K3 in Cognitive domain	Rubric/Viva
3	Analyze advance services concepts-(automation)	K3 in Cognitive domain	Rubric/Viva
4	Illustrate basic concept of neighborhood and master plans	K3 in Cognitive domain	Rubric/Viva
5	Design vertical housing	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.Including building services and structural system
2.Area calculation, building byelaws, FAR/FSI, Height restrictions, covered area.

Project: mid rise/low rise housing

ARC-370 Architectural Design-VI

Design of a medium to high-rise building in a dense urban setting. The problem shouldattempt to bring out a comprehension of the framework that outlines a building interior, thestructural system and the services core, and the relation of this interior with the exteriorenvironment through the building skin. The project should be of high services complexity withmechanical systems for space conditioning, parking and other services, and include theintegration of active energy systems

ARC-315 Building Economics

Elementary concepts of economics

Introduction to economics- Definitions, Needs & Wants, Nature & Scope of Economics.
Division of economics – Micro Economics - Scarcity, Utility - Marginal, Total & Average. Laws of Demand and Supply.
Macro Economics - Economic system in India.

Economics in relation to architecture,engineering and other sciences

Meaning and scope of building economics, Issues and challenges associated with building projects. Building Efficiency, Building Life-cycle. Costs and Benefits of Building - Monetary and Non Monetary.

ARC-314 Human Values

UNIT 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

1. Understanding the harmony in the Nature
2. Interconnectedness and mutual fulfillment among the four orders of nature-recyclability and self-regulation in nature
3. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
4. Holistic perception of harmony at all levels of existence
    a. Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

1. Natural acceptance of human values
2. Definitiveness of Ethical Human Conduct
3. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
4. Competence in professional ethics:
    a. Ability to utilize the professional competence for augmenting universal human order

    b. Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,

    c. Ability to identify and develop appropriate technologies and management patterns for above production systems.

5. Case studies of typical holistic technologies, management models and production systems
6. Strategy for transition from the present state to Universal Human Order:
    a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers
    b. At the level of society: as mutually enriching institutions and organizations

ARC-368 Computer Application in Architecture-VI

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 29 ARMO 3009		M29: Agora
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-370	Architectural Design-VI	35
ARC-371	Building Construction-VI	25
ARC-315	Building Economics	50
ARC-369	Research/Dissertation-I	55
ARC-368	Computer Application in Architecture-VI	35

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Analyse theory of design	K3 in Cognitive domain	Rubric/Viva
2	Analyse basic concepts of waste management	K3 in Cognitive domain	Rubric/Viva
3	Design a landscaped central court of vertical housing	K6 in Cognitive domain	Rubric/Viva
4	Write a dissertation	K5 in Cognitive domain	Rubric/Viva
5	Design a shopping mall	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1. Study and analysis of a live site for site services and site planning.
2. Planning and designing of a campus.

Project: Institutional building complex

ARC-370 Architectural Design-VI(130 Contact Periods)

problem of a complex building involving a high level of services and advanced structuralsystems eg. Sports complex, institutional campus.Exercises in simulation and conceptual modeling shall be conducted.The studio will also focus on sustainable design principles, including waste recycling, rain waterHarvesting, site planning principles and landscaping.

ARC-371 Building Construction-VI

Unit 1-Lightweight constructions

Hollow bricks, slabs, party wall and shell roofs.

Unit 2 Speedy Construction Methods

Types of floor construction - Beam & Slab, Waffle Grid Slab, Drop Beam & Slab, Flush Slab, Lift Slab Construction; Cast-in-situ service & stair cores; Cross wall & Box frame construction.

ARC-315 Building Economics

Project Financing Equity, Financing Institutions in Financing Process, Interim Finance and Permanent

Financing, Bank Loan - Simple Interest and Compound Interest. Types of Mortgage, Lease Arrangements.

Module-4 Economic performance of building

Decision Making using techniques of economic performance to measuretangible and non-tangible issues - Cost-Benefit Analysis, Incremental Analysis and Multi-criteria Analysis.

ARC-369 Research/Dissertation-I

ARC-368 Computer Application in Architecture-VI

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 30 ARMO 3010		M30: Management
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-371	Building Construction-VI	30
ARC-372	Building Structures-VI	20
ARC-369	Research/Dissertation-I	45
ARC-368	Computer Application in Architecture-VI	35

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Analyse building specifications	K4 in Cognitive domain	Rubric/Viva
2	Analyse building estimation and costing	K4 in Cognitive domain	Rubric/Viva
3	Appreciate the role of economics in built environment	K3 in Cognitive domain	Rubric/Viva
4	Apply building byelaws to their design	K3 in Cognitive domain	Rubric/Viva
5	Make a detail working drawing of shopping mall	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.
2.

Project: Reports/Research/dissertation

ARC-371 Building Construction-VI
ARC-372 Building Structures-VI

ARC-369 Research/Dissertation-I

Unit I Introduction Aspects of Analysis of an Architectural project

Unit II
Technical Writing Critical Appreciation of a Project: Analyzing on the basis of site, Built Form and Space, Spatial Organization, Materials and Techniques, Elements and Special Characteristics, Activity Pattern.

Unit III
Book Reviews Review of Book with presentation of the précis.

ARC-368 Computer Application in Architecture-VI

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SEMESTER-VII

Module 31 ARMO 4001		M31: Resurgence
Contacts Hours		72 (2 Weeks)
Subject Code	Subject Name	Max Marks
ARC-406	Environmental Studies	100
ARC-459	Research/Dissertation	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concepts of environment and ecology	K3 in Cognitive domain	Rubric/Viva
2	Evaluate the impact of environmental pollution	K5 in Cognitive domain	Rubric/Viva
3	Apply basic concepts of environmental laws and reLVlations	K3 in Cognitive domain	Rubric/Viva
4	Make Environmental impact assessment reports	K6 in Cognitive domain	Rubric/Viva
5	Value the role of sustainability in built environment	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.
2.

Project: project assessment

ARC-406 Environmental Studies

Unit-I: Ecology & Ecosystem

Concept of Ecology & Ecosystem, Resource analysis for various ecosystems and development imperatives (land, geology, soil, climate, water. vegetation) characteristics, exploitation, causative factors for degradation, analytical techniques.

Unit-II: Environmental Pollution

Definition, causes, effects, standard parameters and control measures of Air, Water, Soil, Noise, Marine, Thermal, Nuclear and Light pollution.

Causes, effects and control measures of urban and industrial waste.

Physical, Chemical and Biological transformation of pollutants.

Unit-III: Introduction to EIA & EMP

Role of EIA in the Planning and decision making process, definition and need, evolution and objectives, tasks and scope, methods of EIA; advantages and limitations.

EMP, Best practices in Environmental Protection and Conservation.

Unit-IV: Environmental Laws and ReLVlations

Introduction to Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Factories Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation, MoEF LVidelines.

Sustainability

Unit I

Introduction to sustainability &Intelligent buildings Social, economic, environmental factors, ecological footprint, local and worldwide sustainable benchmarks, building ecosystem, building life cycle Concept. Concept of intelligent buildings, energy efficiency, vertical transportation systems, communication systems, security systems, building automation and lighting systems.

Unit II
Sustainable design Principles and strategies, site design, energy management, renewable energy, sustainable material selection, water management, indoor air quality, alternative energy, environmental systems, environmental assessment methods.
Unit III
Building Management Systems (BMS) Methods to control, monitor and optimize building services, eg., lighting, heating, security, CCTV and alarm systems, access control, audio-visual and entertainment systems, ventilation, filtration and climate control, etc., even time & attendance control and reporting (notably staff movement and availability).
Unit IV
Energy management in services

ARC-459 Research/Dissertation

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 32 ARMO 4002		**M32: Ocular**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-408	Product Design*1	100
ARC-409	Art Appreciation*1	-

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Apply basic concept of the elective topic	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Elective topic in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the topic	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys on the topic given	P5 in psychomotor domain	Rubric/Viva
5	Present the researched topic in an seminar	K6 in Cognitive domain	Rubric/Viva

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

ARC-408 Product Design (Elective I-A)
ARC-409 Art Appreciation (Elective I-A)

Module 33 ARMO 4003		M33: Hospitality
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-460	Architectural Design-VII	45
ARC-461	Building Construction-VII	50
ARC-407	Project Management	50
ARC-459	Research/Dissertation	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Design a hotel with convention center	K6 in Cognitive domain	
2	Apply basic concepts of service floor and safety in built environment	K3 in Cognitive domain	Rubric/Viva
3	Design indoor recreational facilities	K6 in Cognitive domain	Rubric/Viva
4	Application of waste management techniques in hotel	K3 in Cognitive domain	Rubric/Viva
5	Make a detail working drawing of service floor	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project: Hotel, Haat,

ARC-460 Architectural Design-VII

Concept

ARC-461 Building Construction-VII

Machinery ,Advanced Building Technology

Introduction of pre-stressing, prefabrication & systems building.Jointing, tolerances and modular co-ordination.Mass production, transportation, storage and handling of materials. Characteristics, performance and application of mechanized construction equipment. Advanced vernacular construction techniques.

ARC-407 Project Management

Introduction to Project Management. Project Planning, feasibility studies,
project report, project financing, Project organization, process and structure and personnel selection, responsibilities of the project manager. Project implementation, Site investigations, layout, site organisation, networking techniques, PERT/CPM, LOD, time-cost analysis, value engineering, Project monitoring, cost control, manpower management, safety and labour laws.

ARC-459 Research/Dissertation

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 34 ARMO 4004		M34: Health Care
Contacts Hours		216 (6 Weeks)
Subject Code	**Subject Name**	**Max Marks**
ARC-460	Architectural Design-VII	55
ARC-461	Building Construction-VII	50
ARC-407	Project Management	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Design a hospital	K6 in Cognitive domain	Rubric/Viva
2	Illustrate low cost constructional techniques	K3 in Cognitive domain	Rubric/Viva
3	Apply basic concepts of hospital information system	K3 in Cognitive domain	Rubric/Viva
4	Design healing landscapes	K6 in Cognitive domain	Rubric/Viva
5	Internalize the values of hygiene and social care	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project:Hospital

ARC-460 Architectural Design-VII

(Working Drawings, GFC Drawings)

Preparation of architectural GFC drawings and details of a medium / large project.Preparation of electrical drawings, water supply and sanitary drawings, structural drawings of a small project. Specifications of building materials and simple construction as separate document or annotated on the working drawings.

ARC-461 Building Construction-VII

Defects and Remedies

The study of various defects in buildings and their remedies, Defects caused by dampness, applied forces and changes in size.

ARC-407 Project Management

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 35 ARMO 4005		M35:Perception
Contacts Hours		72 (2 Weeks)
Subject Code	Subject Name	Max Marks
ARC-410	Low Cost Architecture*2	100
ARC-411	Architectural Journalism*2	-

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concept of the elective topic	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Elective topic in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the elective topic	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys related to elective topic	P5 in psychomotor domain	Rubric/Viva
5	Present research work through seminar	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

1.

Project: Report

ARC-410 Low Cost Architecture (Elective II-A)

UNIT I

- An introduction to the subject to understand the various building techniques adopted in different climatic zones of the country, which resulting in varied vernacular expressions.
- Use of cost effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

UNIT II

- Need for low cost construction, both in the rural and the urban sectors.
- Innovations of building techniques for low cost construction.
- Analysis of space norms for low cost buildings.

UNIT III

- Study of usages pattern of low cost buildings by the habitants.
- Comparative analysis of building materials and costing.
- Works of Laurie Baker, Hassan Fathy and other prominent architects.

NOTE The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

REFERENCE BOOKS

- "Building Systems for Low Income Housing", Ashok Kumar Jain; Management Publishing House, 1992

- "Low Cost Housing in Developing Countries", LVru Charan Mathur; For Centre for Science & Technology of the Non-Aligned and Other Developing Countries, Oxford & IBH Publishing Company, 1993

ARC-411 Architectural Journalism (Elective II-B)
Unit I

Introduction to Architectural Journalism

What is Journalism and its importance?? Relation betweenArchitectural Journalism. Reading contemporary and historical writings by Journalists and critics, study their approaches.

Unit II
Introduction to Architectural writing
Writing on different articles, on buildings and social issues
Reports on building under construction
Learn how to gather info and do research for stories

Unit III
Structure of Architectural Journalism and Photo Journalism
Learning of documentation of collected info, content writing, formatting, Page composition
Learning the technique of how the photographs are supporting the write-ups about built environment, to help them understand the expression of pictorial, verbal and visual relationship of architecture journalism

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
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SEMESTER-VIII

Module 36 ARMO 4006		**M36: Professional Training**
Contacts Hours		**22 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-480	Professional Training	100

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Test the theories taught	K5 in Cognitive domain	Rubric/Viva
2	Appraise the relation between the site work and drawings	K5 in Cognitive domain	Rubric/Viva
3	Inculcate teamwork	A4 in Affective domain	Rubric/Viva
4	Devise a procedure for accomplishing a task	K6 in Cognitive domain	Rubric/Viva
5	Display self-reliance, work ethics in an office	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1.
2.

Project: Training portfolio

ARC-480 Professional Training

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

SEMESTER-IX

Module 37 ARMO 5001		M37: AMENABLE
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-503	Disaster Mitigation & Management*3	85
ARC-504	Sustainable Cities & Energy Compliance*3	-
ARC-502	Professional Practice-I	15

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Apply basic concepts of the Sustainable Cities & Energy Compliance	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Sustainable Cities & Energy Compliance in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the Sustainable Cities & Energy Compliance	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys related to the Sustainable Cities & Energy Compliance	P5 in psychomotor domain	Rubric/Viva
5	Present research work through seminar	K6 in Cognitive domain	Rubric/Viva

Project:

COURSE CONTENT

ARC-503 Disaster Mitigation & Management (Elective III-A)

Unit-1 Introduction to Hazards & Disasters

Introduction to disaster management, Indian scenario, Understanding ofdisaster, Hazard and its classification, Vulnerability, Capacity, Risk.Various types of disasters.To understand in detail for the causes, adverse effects, distribution patterns,mitigation measures of Earthquake, Tsunami, Cyclone, Flood and Landslide.Disaster management cycle.

Unit -II Case Studies

Studies to understand above mentioned disasters (National as well asInternational) occurred in past and their inferences.

Unit -III Disaster Preparedness

Disaster Management Act, LVidelines, NDMA.Vulnerability Assessment & Warning systems for above said disaster types.

Unit -IV Disaster Response

Programmes and strategies for disaster reduction. Communications.

Unit -V Disaster Mitigation

Pre disaster, emergency, transition, and recovery. Disaster management plan,Natural crisis management committee, State crisis management group.

Unit -VII Disaster Resistant Construction Techniques

Risk reduction measures through land use control, site planning and landmanagement, design and construction of structures for above mentioneddisasters.

Unit-VI: DISASTER RISK MANAGEMENT IN INDIA

1. Evolution of Disaster Management in India

2. To understand the institutional and legal framework for India

3. Policy and Programmers for Disaster In India
4. Roles and Responsibilities of Panchayat, urban and Local bodies in DisasterManagement
5. community participation, public awareness
6. Indian Case Studies

ARC-504 Sustainable Cities & Energy Compilance (Elective III-B)

People, Environment & Buildings

Relationship between people and environment, impact of people on environment and vice versa, extent of the energy and environmental crises facing the world ,Need for implementing energy efficiency on an international, national and individual basis in the context of the building industry & environmental issues. Introduction to Indoor environment – spatial environment, Thermal environment, visual environment, sonic environment and olfactory environment.

Climate and Built form Responses

Global climate factors, elements of climate, classification of climate zones, desirable conditions, principals of thermal conditions and STI, body heat exchange, thermal balance, psychometric chart, sun path, sun angles ,SAP, sunshine hours, and solar noon, declination, extraterrestrial radiation, solar constant, radiation on different of different directions with different inclination of walls. Radiation spectrum, spectral sensitivity of eye, visual cone and comfort, daylight assessment, types of reflection, glare and quality and spread of light in buildings. Sound waves, audible range of sounds, equal loudness controls, noise reduction systems, sound transmission path.

Emphasis on responses related to cultural, strategic, technological, social and physical with specific reference to climate and built forms.

Traditional Wisdom and Sustainable Concepts

Socio-cultural aspects in the spatial formation of traditional buildings under different climate zones in India. Concepts of 'Sacred build-up and Landscape', An Architectural and Theological Interface, Indigenous knowledge, antiquity, Indian vernacular architecture concepts covering informal, functional architecture of structures, built of local materials and designs to meet the needs of the local people and the intricate variations in local social customs, craftsmanship and climate.

The Architectural concepts may have to emphasize local conditions, geography of region and peoples mind to emphasize traditional wisdom and sustainable concepts.

Sustainable Built Environment, Issues and approaches

Building on the general appreciation of this area in the core studies, students will be required to have a greater insight into matters relating to specific issues concerning the environment and the ecology. An appreciation of particular issues relating to urban and rural morphological sensitivity will be expected. Scarce material/physical resources should be discussed in the context of (a) choice of materials and (b) diminishing natural resources as should eco-friendly and 'safe' materials with specific reference to thermal, visual comforts. Besides, Students should have an appreciation of aesthetic issues in the built environment. The participants should also have knowledge of the principal considerations involved in the evaluation or survey of built up environment intended for sustainable concepts. They should be familiar with safety considerations relating to the built environment.

Water and Built Forms, Land and Vegetation

Introduction, water demand, growing water misuse, pollution, threat to environment, social implications, sustainability of water recourses, ground water management, issues related to urban water supply. Running water and underground water; channel networks and drainage basins, hill slope geomorphology.

Introduction, land forms, Grazing lands, soil erosion, deforestation, air pollution.
Growing concerns of vegetation due to excessive usage, impact of vegetation on soil erosion, prevention of erosion, livestock management, sustainability of urban landscape, wet lands, and sustainable agriculture.

ARC-502 Professional Practice-I

Unit I Role of Professional Bodies

The Indian Institute of Architects, its working constitution and byelaws, categories of membership, election procedures. The Uttar Pradesh Architects Association.

Module 38 ARMO 5002		**M38: Smart Cities**
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-503	Disaster Mitigation & Management*3	15
ARC-504	Sustainable Cities & Energy Compliance*3	-
ARC-557	Architectural Design-IX	10
ARC-502	Professional Practice-I	35

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Illustrate basic concepts of smart city	K3 in Cognitive domain	Rubric/Viva
2	Illustrate basic concepts of resilient city	K3 in Cognitive domain	Rubric/Viva
3	Illustrate the contemporary trends in urban development	K3 in Cognitive domain	Rubric/Viva
4	Apply basic concepts of internet of things related to urban context	K3 in Cognitive domain	Rubric/Viva
5	Internalize the values of vision/ mission of govt. policies related to urban fabric	A5 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-503 Disaster Mitigation & Management (Elective III-A)

Project Work: (Field Work, Case Studies)

The project /fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects are conceived creatively based on the geographic location and hazard profile of given region

ARC-504 Sustainable Cities & Energy Compliance (Elective III-B)

Solar Passive Design (Concepts, Strategies & Services)

Introduction of passive solar architecture, appreciation of Built form for different climates, building clusters and solar exposure, thermal environment. Types of passive systems, direct gain, thermal storage wall, attached green house, thermal storage roof and convective loop.

Modern and postmodern passive architecture, methods, strategies, systems, and construction details emphasizing the passive architecture and non-active services.

ARC-557 Architectural Design-IX

ARC-502 Professional Practice-I
Unit I Architects' Act 1972
Detail study of the Act, Council of Architecture; Procedures of membership.
Unit II
Scale of charges Conditions of engagement of an architect – Duties; Responsibilities and liabilities of a professional architect; Scale of charges, mode of payment etc

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 39 ARMO 5003		**M39: Urban Design**
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-557	Architectural Design-IX	40
ARC-5002	Professional Practice-I	50

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Appreciate basic concepts of urban design	K3 in Cognitive domain	Rubric/Viva
2	Value the role of urban systems in society	A3 in Affective domain	Rubric/Viva
3	Illustrate history of urban design	K3 in Cognitive domain	Rubric/Viva
4	Illustrate concepts of professional practice	K3 in Cognitive domain	Rubric/Viva
5	Design intervention in a bazzar street	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-557 Architectural Design IX
Project: Urban Space Analysis
Unit 1: STUDY AND ANALYSIS OF URBAN SPACES, MODERN CONCEPTS IN URBAN DESIGN
A brief study and analysis of urban space.

Study of Urban design theories of Christopher Alaxander, Jane Jacob, Gordon Cullen and Kevin Lynch. Relevance of historic concepts of urban design in the present context-Critical analysis of Indian cities
& understanding the urban design projects of Singapore, China & United States.

Unit 2: BASIC PRINCIPLES & TECHNIQUES IN URBAN DESIGN
Components in urban design composition. Urban scale, mass and space, definition of urban fabric,visual surveys and their influence for urban design, various methods of conducting a visual survey.
Definition and purpose of open spaces and their hierarchy in urban design-hierarchy of utility spacesfor residential, commercial, recreational and industrial use. Special focus on streets-Expressive qualityof built forms, spaces in public domain.

UNIT 3: RENEWAL, RE-DEVELOPEMENT AND FORMULATING URBAN DESIGN
Definition and need for urban renewal and re-developement, scope for urban renewal in Indiachallenges and implementation methods of urban renewal for Indian historic towns and cities, impactof public participation. Analysis and formulation of urban design LVidelines for new developments.
National and international case studies for urban renewal.

ARC-502 Professional Practice-I

Unit -I Code of Professional conduct & Architectural Competition
Clauses governing conduct of professional architect.Types of competitions; need and procedure for conducting competitions.

Unit -II Tender and Contract
Type of building contracts, their demands. Preparation of tender documents, method of inviting tenders, opening of tenders, preparation of comparative statement recommendation and award of projects, preparation of contract documents, general conditions of contract, interim certificates, defect liability period, retention amount and virtual completion.

Unit -III Easements
Introduction to various easement process and precautions to protect easement rights.

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 40 ARMO 5004		M40: Mixed Use Development
Contacts Hours		**216 (6 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-557	Architectural Design IX	45
ARC-505	Transport Planning*4	15
ARC-506	Urban & Regional Planning*4	-

COURSE OUTCOMES

Architectural Graduate will be able to:		**Knowledge domain and level**	**Evaluation Method**
1	Illustrate concepts of various Land Uses and land planning	K3 in Cognitive domain	Rubric/Viva
2	Apply basic concepts of town planning	K3 in Cognitive domain	Rubric/Viva
3	Design intervention in transit oriented development	K6 in Cognitive domain	Rubric/Viva
4	Develop a vision document for mixed land use	K6 in Cognitive domain	Rubric/Viva
5	Integrate social, ecological and economic concerns	A4 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

Project:

COURSE CONTENT

ARC-557 Architectural Design IX

Project: Urban Design Intervention

Design intervention into an existing urban precinct. Creating proposal document, drawings, maps and 3D physical model for proposed project. Urban outdoor lighting, urban green infrastructure, acoustic consideration for urban fabric, air quality at street level.

ARC-505 Transport Planning (Elective IV-A)

Unit I Introduction:
Transport and Socioeconomic Activities, Historical Development of Transport, Transportation in the Cities, Freight Transportation, Future Developments

ARC-506 Urban & Regional Planning (Elective IV-A)

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.

Module 41 ARMO 5005		M41: Sprawl
Contacts Hours		**72 (2 Weeks)**
Subject Code	**Subject Name**	**Max Marks**
ARC-557	Architectural Design IX	05
ARC-505	Transport Planning*4	85
ARC-506	Urban & Regional Planning*4	-

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Apply basic concept of the elective topic	K3 in Cognitive domain	Rubric/Viva
2	Appreciate the role of Elective topic in global scenario	K3 in Cognitive domain	Rubric/Viva
3	Internalize the values of the elective	A5 in Affective domain	Rubric/Viva
4	Conduct the surveys related to elective	P5 in psychomotor domain	Rubric/Viva
5	Present research work through seminar	K6 in Cognitive domain	Rubric/Viva

COURSE OBJECTIVES
Project:

COURSE CONTENT
ARC-557 Architectural Design IX
ARC-505 Transport Planning (Elective IV-A)
Unit I
Urban Transportation System Planning- Conceptual Aspects:
Transport Planning Process, Problem Definition, Solution Generation, Solution Analysis, Evaluation and Choice, Implementation, Sequence of Activities Involved in Transport analysis.
Unit II
Trip Generation Analysis: Trip Production Analysis, Category Analysis, Trip Attraction Modelling. Mode Choice Modelling: Influencing Factors, Earlier Modal Split Models, Trip-End Type Modal Split Model, Trip-Interchange Modal Split Model, Disaggregate Mode-Choice Model, Logit Model of Mode Choice, Binary Choice Situations, Multinomial Logit Model, Model calibration, Case studies.

Unit III Route Assignment:
Description of transport network, Route Choice Behaviour, The Minimum Path, Minimum Path Algorithm, Route Assignment Techniques, All-or-Nothing Assignment, Multipath Traffic Assignment, Capacity-Restrained Traffic Assignment
Unit IV Transportation Surveys
Definition of Study Area, Zoning, Types of Movements, Types of Surveys, Home- Interview Survey, Commercial Vehicle Survey, Intermediate Public Transport Survey, Public Transport Survey, Roadside-Interview Survey, Cordon-Line Survey, Post-Card Questionnaire Survey, Registration-Number Survey, Tag-on- Vehicle Survey.
Unit V Transport Related Land-Use Models:
Development of Land - Use models, The Lowry Model, Application of Lowry Model.
Unit VI Urban Structure:
Urban Activity Systems, Urban Movement Hierarchies, Types of Urban Structure, Centripetal-Type Urban Structure, Grid- Type Urban Structure, Linear-Type Urban Structure, Directional Grid Urban Structure.
ARC-506 Urban & Regional Planning (Elective IV-A)

SEMESTER-X

Module 42 ARMO 5006		M42:Architectural Thesis
Contacts Hours		936 (26 Weeks)
Subject Code	Subject Name	Max Marks
ARC-565	Thesis	100
ARC-515	Professional Practice-II	100

COURSE OUTCOMES

Architectural Graduate will be able to:		Knowledge domain and level	Evaluation Method
1	Design architectural project in totality	K6 in Cognitive domain	Rubric/Viva
2	Communicate the thesis proposal to expert jury	K3 in Cognitive domain	Rubric/Viva
3	Write thesis report	K6 in Cognitive domain	Rubric/Viva
4	Make scale model of the design thesis	K6 in Cognitive domain	Rubric/Viva
5	Value the role of time management in architectural project	A3 in Affective domain	Rubric/Viva

COURSE OBJECTIVES

1. To prepare a student to independently handle and present all aspects of an architectural design, from its evolution

to final solution in totality.

2. To understand the importance of the evolutionary stages of a design process and various techniques required for

a successful presentation of an architectural design.

3. To develop in students the ability to handle specific aspects / thrust area of design relevant to the topic2.

Project: Thesis

ARC-565 Thesis (400 Contact Periods)

ARC-515 Professional Practice-II

Units I-Valuation Valuation of immovable properties, elements of valuation and factors affecting valuation; Techniques of valuation of landed and building property; Value classification and types of valuation.

Units II-Arbitration Arbitration, Arbitrator, Umpire, Nature of arbitration. Appointment, Conduct, Powers, and duties of arbitrators and umpires; Procedure of arbitration and preparation of awards.

Units IV-Law related to Land

The land acquisition Act, UP Urban Development Act 1973

Units IV-Law of Control

The Partnership Act, 1932

Units V-Law related to Conservation

The elements of the Ancient monument,(site remains) Act 1956

NOTE:	Internal and external exams shall be carried out by a Jury of Internal or External Examiners which would be marked on the basis of the approved evaluation rubric
	S / P Internal Marks shall be awarded on students' work in the form of Case Study / Design Sheets / Reports / Models / Presentations / Seminars, which shall be evaluated by approved evaluation rubric by concerned faculty.