

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
REVISED COURSES INTRODUCED IN B.ARCH PROGRAMME DURING THE ACADEMIC YEAR
2021-22

PREAMBLE

The Board of Studies approved the proposed Curriculum and syllabus of Regulation 2020 for B.Arch. course with incorporation of suggestions and feedback given by the external members. The suggestions made by the external members are presented in the minutes of meeting are given below.

A Board of Studies meeting was held as Virtual mode in ZOOM platform on 30th June 2020 with the following agenda:

1. Welcome address, opening remarks on the proposal to introduce REGULATION 2020 and the methodology adopted.
2. Comparative analysis of existing R 2015 and proposed R 2020 curriculum structure, R 2020 curriculum structure and Salient Features of Regulation 2020.
3. Detailed discussions on the proposed syllabus (from semester I to semester X) and proposed Regulation 2020.
4. Any other matter with the permission of Chair.

Minutes of the meeting:

- Dr. Devyani Gangopadhyay presented the welcome address and briefed the agenda of the meeting
 - Prof.SureshKuppusamy, discussed on the conceptual framework of the revisions in R2020 syllabus.
 - Dr.DevyaniGangopadhyaydiscussed on the salient features of the proposed revised curriculum structure along with the analysis stating the intent of the revisions in curriculum structure and the content integrating with Design studios.
 - The professional training was proposed to be shifted to eighth semester as per Council of Architecture Regulations 2017.
 - Prof. Meghal, raised a query on COA's distribution of courses as it is mandatory to be followed or optional.
 - Prof. Devyani Gangopadhyay, replied it as optional.
 - Prof. Meghal asked on the necessity for **Applied mathematics**. She suggested that it could be Geometry instead of Trigonometry and suggested to reduce credits, asked to review on this.
 - Remove this subject and replace other subject or replace these credits to other subjects and integrate with Design.
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- Ar.Pramod said geometrical exercises already there in Architectural Drawing and hence the syllabus can be reoriented apart from geometry.
 - the internal team agreed upon this suggestion.
 - Ar. Pramod, commented that **Soft skill development** cannot be just a theory subject for one semester and needs to be proposed in every semester with introduction in I semester, so that we can ensure continuous learning till 9th semester .
 - Prof. Meghal, seconded on the above citing this will help the agenda of integration much more. She approved for introducing Soft skill development.
 - The internal committee agreed to the external members' decision.
 - Ar.Pramod insisted that **Society culture and environment** can't be dealt fully in one semester. He felt the society connect should be reflected in the semester Design studios.
 - Prof.Suresh Kuppusamy replied that this can be strengthened and shall be proposed in third and fourth as SCE-I and SCE-II respectively. Lectures can be given in the studio hours on these and can integrate with design.
 - Prof.Devyani briefed to the committee members that many students in 9thsem Dissertation project, took society related topics like- Public open spaces, Behavioural study in public spaces like parks, streets and walkability and pursued the dissertation successfully.
 - Ar.Pramod and Prof. Meghal approved on introducing Society Culture and Environment upon insisting that the subject is interrelated with Architectural Design.
 - Ar. Meghal presented her views on **History Of Architecture**. She commented that only styles are mentioned in the syllabus and deep thinking as a lens through approach needs to be done.
 - Ar. Pramod presented his views on the subject -Material and Construction Studio- He suggested that a small- scale design exercise could be given to the students in order to understand the material in detail. Students must have the feel of the material through hands on training, apart from plates.
 - Dr Devyani Gangopadhyay explained the strategy of integrating Materials and Construction with Architectural Design. He explained that the previous semester design proposal may be taken up for detailing in Materials and Construction for the following semester.
 - Prof. Meghal, appreciated the idea of making students developing details from their previous semester design.
 - Prof. Meghal emphasized on the need to integrate some sense of structure in the Materials and Construction. She proposed that the faculty of Structural Engineering and Architecture must work as a team for better understanding of the students. She proposed that preferably a Practicing Architect who has strong knowledge in Structures may take up Structure.
 - Prof.Suresh Kuppuswamy/ internal committee agreed for this suggestion subject to availability of such a resource person.
 - **Model making workshop-** Ar. Pramod advised to set up kiln for model making workshop within the campus for more activities.
 - The internal committee replied that this proposal was already in the budget and will be carried over.
 - Both the external members insisted on the Idea of strengthening infrastructure for workshops.
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Devyani

- Prof. Suresh Kuppaswamy, agreed on the recommendation of the externals and registered that Architectural model making can be dealt not as a separate subject, but can be an integral part of theory and design.
- Prof. Meghal agreed on the above and suggested that the Materials and Construction studio and Structure studio can incorporate model making.
- Prof. Meghal proposed that Architectural Education should stress on computational skills rather Computer skills and proposed that softwares like Sketch up, V-Ray can be learnt by the students themselves and need not be a part of the curriculum.
- Prof.Suresh Kuppaswamy, explained that the students need to equip themselves (based on orientation program on Practical training) for practical training. Hence the computer skills are proposed.
- Prof.Meghal suggested to use” **Design Communication**” to make the student equipped for internship.
- Practical Training- Ar.Pramod suggested that SIST must create relationship with practicing architects so that the students can be referred for Internship.
- Prof. Suresh asked the opinion of externals on having the Professional Training in the 10th semester.
- Ar.Pramod had no objection to this proposal, but Prof.Meghal , preferred the Professional Training in the middle of the curriculum so that the students can benefit from the internship and apply the knowledge gained in their academic exercises.
- Dr. Devyani Gangopadhyay asked for further suggestions on the revised syllabus and curriculum
- Ar. Pramod appreciated that voluminous work has been exercised in revising the syllabus. He pointed out that in few places it has become too much to grasp for a student in the limited period of time. He proposed that Design exercises need not be problem solving and the brief should involve the students to develop the design holistically as his/her contribution.
- Ar. Pramod pointed out that it is more important to articulate the design briefs in a manner which creates more interest within the student and makes the student think out of the box. He also forwarded some interesting Architectural Design Studio methodology to the committee as examples of methodology followed in Design studios practiced by him.
- Ar Pramod suggested that for design evaluation, the faculty members of other classes may be involved as internal jury.
- Prof.Devyani, replied that this practice of involving other faculty members is already in practice and agreed this will be implemented for all semesters.
- Prof.Meghal and Ar. Pramod suggested the same curriculum can be presented to the forthcoming Academic council with incorporation of suggestions made by the members.

Prof. Devyani concluded the meeting with acceptance that all the recommendations and observations of the external members will be carried over and incorporated and consequent BOS meeting shall be convened after incorporating the recommendations. Ar. Shankar delivered the vote of thanks, felicitating the external members.





SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
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DEPARTMENT OF ARCHITECTURE

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

Board of Studies meeting for B.Arch. held on 30-06-2020



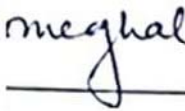




Venue: Virtual meet in ZOOM platform

Members present:

External Members	Signature	Internal Members	Signature
AR. PRAMOD BALAKRISHNAN Chief Architect, Edifice Chennai		DR. DEVYANI GANGOPHAHY Dean & Head Department of Architecture School of Building & Environment	
		DR. SURESH KUPPUSAMY Senior Professor & Design Chair Department of Architecture	
DR. MEGHAL ARYA Associate Professor Faculty of Architecture, CEPT University, Ahmedabad		AR. EBIN HARRISON Associate Professor	
		AR. ARULMALAR.R Associate Professor	
		AR.V. SHANKAR Associate Professor	

The Board of Studies approved the proposed Curriculum and syllabus of Regulation 2020 for B.Arch. course with incorporation of suggestions and feedback given by the external members. The suggestions made by the external members are presented in the minutes of meeting are given below.

Minutes approved by:

External Members	Signature	Internal Members	Signature
AR. PRAMOD BALAKRISHNAN Chief Architect, Edifice Chennai		DR. DEVYANI GANGOPHAHY Dean & Head Department of Architecture School of Building & Environment	
DR. MEGHAL ARYA Associate Professor Faculty of Architecture, CEPT University, Ahmedabad		DR. SURESH KUPPUSAMY Senior Professor & Design Chair Department of Architecture	
		AR. EBIN HARRISON Associate Professor	
		AR. ARULMALAR.R Associate Professor	
		AR.V. SHANKAR Associate Professor	



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The content included in the revised courses introduced in the academic year 2021-2022 are highlighted in yellow colour

SAR1206	HISTORY OF ARCHITECTURE II	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 LATE IRON AGE

6 Hrs.

Republic and empire, Roman religion, Urban planning, Art and Architecture, Forums and Basilicas, principles of reuse in construction, Enclosure, orders and Manipulation of space
Examples- Forum Romanum, Pantheon, Colosseum, Circus Maximus, Thermae of Caracalla.

UNIT 2 EARLY MIDDLE AGE

8 Hrs.

Feudalism, Monasticism, Guilds, Medieval monasteries, Medieval Domestic Architecture, Cluny- Romanesque churches, Development of vaulting, Abbaye Aux Homes, Tower of London, Dunham Cathedral, Birth and spread of Christianity, Early Christian Worship and burial, Basilican concept- St. Peters Rome, St. Clement, Rome, Centralised Plan - St.Vitale - Ravenna, Hagia Sophia.

UNIT 3 MIDDLE AGE

8 Hrs.

Evolution of temples, fractals in temples, Borobudur temple, Durga temple- Aihole, Ladh Khan Temple, Tigawa temple, Papanatha Temple, Virupaksha Temple, Lingaraja Temple, Jagannath Temple- Puri, Jain Temple- Mt.Abu, Shore temple and Rathas -Mahabalipuram, Brihadeeshwara Temple, Meenakshi Amman Temple - Madurai, Srirangam Temple.

UNIT 4 LATE MIDDLE AGE

8 Hrs.

Political and social changes, Re-Emergence of the city, Crusades, Scholasticism, Development of Gothic Architecture, fractals in cathedrals, Structural developments in France and England- Notre Dame- Amiens, Notre Dame- Paris, Westminster Abbey, Milan Cathedral, Wooden roofs in Churches and Domestic Architecture.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Mark M.Jarzombek, VikramadityaPrakash, A global history of architecture, Wiley,2011
2. Lloyd / H. W. Miller, History of world Architecture series, Faber Ltd, London, 1986
3. Sir Bannister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986
4. Percy Brown, Indian Architecture (Hindu Period), Taraporevala and Sons, Bombay, 1983
5. Satish Grover, The Architecture of India (Hindu period), Vikas Publishing House Pvt. Ltd., New Delhi,1981
6. Volwahren, Living Architecture – India (Hindu Period), Macdonald & Co, 1969



SARA1301	HISTORY CULTURE AND BUILT ENVIRONMENT -III	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To comprehend the role of tangible and intangible parameters in determining the architectural expressions in diverse contexts of Dravidian architecture.
- To impart knowledge about the development of architecture from early middle age to late middle age.
- To explore the construction techniques adopted in Western and Indian context.

UNIT 1 EARLY MIDDLE AGE

8 Hrs.

Spread of Christianity - the evolution of early Christian Church form from the Roman basilica- Contribution of Byzantine architecture in the development of structural system with relevant examples-**Evolution of artisanal craft and structural principal of Romanesque period- Medieval Monasteries** - Influences & architectural character of Romanesque churches in Italy (Pisa complex), France (Abbey Aux Hommes)&Durham cathedral.

UNIT 2 MIDDLE AGE: DRAVIDIAN ARCHITECTURE

8 Hrs.

Evolution of Hindu Temple-fractals in temples - Early shrines of the Gupta and Chalukyan periods - **Sangam Era keezadi-Tigawa temple, Ladh Khan temple and Durga temple - Development of Dravidian style and importance of the rulers, life and culture:** Pallava style five Rathas, temple at Mahabalipuram:Chola style with temple examples:Evolution of Gopuram& temple complexes – **Example of Pandyan style - Influence of Nayaks.**

UNIT 3 MIDDLE AGE: NAGARA ARCHITECTURE

4 Hrs.

Classification of Indo-Aryan temples, examples of Orissa style - Lingaraja temple at Bhuvaneshwar& Sun temple at Konarak, Example of Gujarat style - Surya temple at Modhera, Madhyapradesh - Dilwara temple, Mt. Abu.

UNIT 4 LATE MIDDLE AGE

6 Hrs.

Political and social changes- Re-Emergence of the city - Crusades - Scholasticism-Development of Gothic Architecture in France, evolution of Gothic cathedral & structural system using vaulting & flying buttress, the example of Notre Dame cathedral at Paris. **Gothic Architecture in Italy**& the example of Milan cathedral. **Development of English Gothic vaulting**& the example of Westminster Abbey at London - wooden roofed churches.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS

4 Hrs.

Map the role of tangible and intangible factors that shaped the architecture from early to late middle age. **Sketches / models of different ages- built forms, columns, details and architectural developments. Comparative studies of Dravidian architecture and Indo -Aryan architecture.**

Max. 30 Hours



COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Outline the evolution of churches during the early middle ages.
- CO2** Discuss the evolution of Dravidian temple architecture.
- CO3** Summarize the planning principles and salient features of temples in South India.
- CO4** Comprehend the architectural features of Indo Aryan temple styles.
- CO5** Appraise the emergence, evolution and construction techniques of Gothic architecture in Italy and Britain.
- CO6** Construct structural drawings in details of middle age historic buildings.

TEXT / REFERENCE BOOKS

1. Jarzombek, M.M. &Prakash, V. (2011). A global history of architecture, Wiley.
2. Lloyd.S& / Miller,H.W. (1986). History of world Architecture series, Faber Ltd., London.
3. Fletcher, B. (1986). A History of Architecture, University of London, TheAthlone Press.
4. Kostof, S. (1985). A history of Architecture - settings and Rituals, Oxford University Press London.
5. Tadgell, C. (1990). The History of Architecture of India from the Dawn of Civilization to the end of the Raj, Longman UK, London.
6. Brown, P. (1983). Indian Architecture (Buddhist Period) , Volume I, Taraporevala and Sons, Bombay
7. Grover, S. (1981). The Architecture of India (Buddhist period), Vikas Publishing House Pvt. Ltd., New Delhi
8. Volwahren, A. (1969). Living Architecture: India (Buddhist Period), Macdonald & Co, London.
9. Srinivasan,K.R.(2005),Temples Of South India, National Book Trust, India



SAR 1202	BUILDING SERVICES I	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 WATER SUPPLY ENGINEERING

8 Hrs.

Water sources-surface & groundwater sources, Quantity and quality of water-demand projection, per capita consumption of water, Nature of impurities, water treatment systems, tests - Water Distribution Methods of Distribution, Systems of Supply of Water, Layout of Distribution Pipes- Internal water supply in Buildings Types of Pipes, Laying of pipes - Above & Below Ground, Jointing, Testing-Prevention of Water Wastage - Preparing Water Supply Schemes, standards for water supply.

UNIT 2 PLUMBING

6 Hrs. House

Drainage, Domestic Sanitary Installations, traps, various Systems of House Plumbing, Rain water harvesting and systems, Drainage of Sub-soil water, Layout of Drainage system, connection to sewers, Standards for Sanitary Conveniences.

UNIT 3 SEWAGE TREATMENT

8 Hrs.

Typical layout and components of sewage treatment plant - Primary and Secondary treatment - Activated Sludge Process, Disinfection, Disposal of Sewage-Disposal of sewage from isolated buildings - Septic Tanks, Disposal of sewage in Villages - Waste water recycling

UNIT 4 ENVIRONMENTAL SANITATION

8 Hrs.

Environmental sanitation-the importance of sanitation classification of waste, disposal of refuse, composition, collection, conveyance of refuse disposal systems in towns & recovery of refuse Sewerage system - sewage -definitions and importance of quantity of sewage, storm water and design of sewers-systems of sewerage-dry and water carriage systems, patterns of collection, sewers - materials used, shapes of sewers, construction & maintenance of sewers, sewer joints, sewer appurtenances.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Fair G.M., Geyer J.C. and Okun D.A., Water and Waste Engineering, Volume 2, John Wiley and sons, Inc. New York, 1968
2. Manual on water and treatment, 2nd Edition, CPHEEO, Ministry of works and Housing, New Delhi, 1980
3. Rangwala S.C., water supply and sanitary Engineering, AnandCharotar publishing house, 1981
4. VenugopalaRao P., Textbook of Environmental Engineering, Prentice Hall of India Pvt. Ltd., 2002
5. Husian S.K., Textbook of Water Supply and Sanitary Engineering, Oxford & IBH, 2006



SARA1302	BUILDING SERVICES-I	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To inculcate basic principles of plumbing and sanitation services
- To understand its necessity in architectural space planning parameters.
- To enable them to comprehend the subject thoroughly and integrate the learning in the architectural design.

UNIT 1 WATER SUPPLY AND PLUMBING

8 Hrs.

Introduction to Building Services - Water sources- Quantity and quality of water-demand projection, per capita consumption of water, Nature of impurities, water treatment process, tests, Methods of Distribution, Layout of Distribution Pipes, sump and other storage tanks -Internal water supply in Buildings, Types of Pipes, Laying of pipes, Prevention of Water Wastage ,Fixtures and fittings of a contemporary bathroom and kitchen - Preparing Water Supply Schemes, standards for water supply- **ECBC requirements.**

UNIT 2 SANITATION AND DRAINAGE

6 Hrs.

House Drainage, Layout of Drainage system, Methods of laying and construction of sewers, Traps - shapes, sizes, types, function, Ventilation of House drainage - Anti siphonage pipe, various system of plumbing, Chambers - fixtures and fittings of toilet, bathroom and kitchen - **Rain water harvesting and systems.**

UNIT 3 SEWAGE TREATMENT

6 Hrs.

Typical layout and components of sewage treatment plant - Primary and Secondary treatment - Activated Sludge Process, Disinfection, Disposal of Sewage-Disposal of sewage from isolated buildings - Septic Tanks, Disposal of sewage in Villages - Waste water recycling - **ECBC requirements**

UNIT 4 ENVIRONMENTAL SANITATION

6 Hrs.

Introduction to Environmental sanitation-the importance of sanitation classification of waste-disposal of refuse, Sewerage system - storm water and design of sewers-systems of sewerage-dry and water carriage systems, patterns of collection, sewers - materials used, shapes of sewers, construction & maintenance of sewers, sewer joints, sewer appurtenances, **EIA requirements of water supply and drainage systems for large scale infrastructure development.**

UNIT 5 CONSTRUCTIVE ASSIGNMENTS

4 Hrs.

Spatial requirements for overhead water tank, sump, sewage treatment plant, water treatment plant, plumbing shaft types – ventilation shaft, shaft for different types of pipes, and their location, integration in different building typologies Suggested Assignment: Plates, brochure collection – incorporation of studied concepts in the respective semester’s Architecture Design studio - Suggested Assignment: Documentation of Environmental sanitation through Case study and field visits.

Max. 30 Hours



COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Ability to understand the importance of water supply system and its operation in buildings.
- CO2** Identify various types of sanitary fittings, demand calculation and to prepare water supply scheme.
- CO3** Develop comprehensive knowledge of design and construction of drainage systems in buildings and built environment
- CO4** Ability to understand the process of solid waste management and hence develop strategies for effective waste management in buildings and built environment
- CO5** Understand and comprehend the Environmental Sanitation through classification of types of wastes.
- CO6** Analyse and develop comprehensive knowledge of architectural space planning for water supply & sanitation system and integration of systems in built forms

TEXT / REFERENCE BOOKS

1. Fair G.M., Geyer J.C. and Okun D.A., Water and Waste Water Engineering: water Supply and wastewater Removal, 3rd Edition, October 2010 John Wiley & Sons,
2. Manual on water supply and treatment, 1999, CPHEEO, Ministry of works and Housing, New Delhi
3. Manual on Sewerage and Sewage treatment Systems, 2013, CPHEEO, Ministry of works and Housing, New Delhi
4. Rangwala S.C., water supply and sanitary Engineering, AnandCharotar publishing house, 29th edition, 2019
5. VenugopalaRao P., Textbook of Environmental Engineering, Prentice Hall of India Pvt. Ltd., 2004
6. Husain S.K., Textbook of Water Supply and Sanitary Engineering, Oxford & IBH, 3rd edition, 2017
7. Dr. B.C. Punmia, Ashok Kumar Jain, Arun Kumar Jain., “Water Supply Engineering” Laxmi Publications, 1995,. Reprint 2016
8. Dr.B.C. Punmia, Arun Kumar Jain., “Wastewater Engineering”, Laxmi Publications, 1998.
9. RakeshHooja Ramesh K. Arora, et al., “Water Management- Multiple dimensions”, Rawat Publications, 2007
10. Nobert, M.L, “Plumbing, Electricity, Acoustics- Sustainable design methods for Architecture”, John Wiley & Sons, Inc, 2012.



SAR 1204	CLIMATOLOGY	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 CLIMATE AND COMFORT

6 Hrs

Global climatic factors - earth rotation - axis inclination - radiation at earth's surface - earth's thermal balance - wind thermal forces - Components of climate - geographic belt between the tropic of cancer and the tropic of Capricorn - Thermal comfort factors and indices - Site Climate - elements of climate - temperature - humidity - precipitation - sky conditions - solar radiation - Impact of rainfall on design of buildings.

UNIT 2 CLASSIFICATION OF CLIMATE

7 Hrs

Koppen Climate Classification System - Atkinson climate classification - characteristics of tropical climates - warm humid climate, warm humid island climate, hot dry desert climate, hot dry maritime desert climate, composite / monsoon climate, tropical upland climate, climate graph.

UNIT 3 THERMAL PROPERTY OF BUILDING ENVELOPE

10Hrs

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 - introduction to periodic heat flow in building, time lag & decrement factor.

UNIT 4 VENTILATION AND DAYLIGHTING

7 Hrs

Functions of ventilation - stack effect due to the thermal forces, wind velocity - wind rose, wind pressure - Air movement through buildings - Air movement around buildings - factors affecting air flow, Wind shadow etc. - Thermally induced air currents.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. ArvindKrishan, Nick Baker, Simons Yannas, Szokolay S.V., Climatic Responsive Architecture - A Design Handbook for Energy Efficient Buildings, Tata McGraw Hill Publishing Company Ltd, New Delhi, 2001
2. BIS, SP 41: Handbook on Functional Requirements of Buildings (Other than Industrial Buildings), 1987
3. Koenigsberger O.H., Ingersol T.G., Mayhew A. and Szokolay S.V., Manual of Tropical Building and Housing, Orient Longman Pvt. Ltd, 2004
4. Martin Evans, Housing, Climate and Comfort, Architectural Press, London, 1980.
5. Mark Dekay and Brown G.Z, Sun, wind and Light: Architectural design strategies, 3rd edition, John Wiley and sons, 2014
6. Richard Hyde, Climate Responsive Design: A study of buildings in moderate and hot humid climates, E & FN Spon, London, 2000.



SAR1208	CLIMATIC DESIGN	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 SOLAR CHARTS AND SHADING DEVICES

10 Hrs.

Introduction to Sun path diagrams - Angles of Incidence - Horizontal and Vertical Shadow angles - Shadow Mask - Exercises on plotting shadow angles on sun-path diagrams, Design of solar shading devices for different orientations.

UNIT 2 DESIGN STRATEGY FOR FLOORS, WALLS AND ROOFS

6 Hrs.

Building skin thickness - mass surface absorptance - daylight reflecting surfaces - exterior surface colour - floors, walls and roofs- size and orientation, location, materials, shape and colours and layers (windows) - insulation outside - external and internal shading - glass types.

UNIT 3 PASSIVE DESIGN STRATEGIES

7 Hrs.

Passive heating design strategies - heat loss control - passive solar heating - windows - glazed walls - roof space collectors - transitional spaces - glazed atriums - Passive cooling design strategies - wall and roof openings for convective cooling - natural and architectural means of evaporative cooling - radiative cooling through roof - ground cooling and building underground - transitional spaces - courtyards, patio, veranda.

UNIT 4 DESIGN WITH CLIMATE

7 Hrs.

Climate data analysis for various zones - hot and dry - hot and humid - warm and humid - moderate - cold and cloudy - cold and dry - composite - climatic context - landscape and vegetation - solar radiation - mean temperature - relative humidity - precipitation - winds - sky conditions - miscellaneous.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Koenigsberger O.H., Ingersol T. G., Mayhew A. and Szokolay S.V., Manual of Tropical Housing and Building Part1 - Climatic Design, Orient Longman Pvt. Ltd., Chennai, 2004.
2. Martin Evans, Housing, Climate and Comfort, Architectural Press, London, 1980
3. ArvindKrishan, Nick Baker, Simons Yannas, Szokolay S.V., Climatic Responsive Architecture: A DesignHandbook for Energy Efficient Buildings, Tata McGraw Hill Publishing Company Ltd, New Delhi, 2001.
4. Mark Dekay and Brown G.Z., Sun, wind and Light: Architectural design strategies, 3rd edition, John Wiley and sons, 2014
5. Richard Hyde, Climate Responsive Design: A study of buildings in moderate and hot humid climates, E & FN Spon, London, 2000
6. Vinod Gupta, Energy and Habitat: Town Planning and Building Design for Energy Conservation, John Wiley and sons, 1984



SARA1303	CLIMATOLOGY	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To realize the role of climate in shaping a climate responsive built form.
- To understand the need and importance of ventilation, day lighting, shading devices in building design towards the approach of climate responsive built environment.
- To familiarize on passive design strategies for architecture of different climatic zones.
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UNIT 1 CLIMATE: FACTORS AND CLASSIFICATION 6 Hrs.

Global climatic factors, Components of climate - Koppen Climate Classification System - Atkinson climate classification - Impact of climate and building on Ecological balance-characteristics of tropical climates - climate graph.

UNIT 2 VENTILATION AND DAYLIGHTING 6 Hrs.

Functions of ventilation - stack effect due to the thermal forces, wind velocity - wind rose, wind pressure - Air movement through buildings - Air movement around buildings - factors affecting air flow and wind shadows. Importance of day lighting – designing principles with day lighting in buildings – Characteristics of natural light: transmission, reflection, diffusion, glare – light shelves and light pipes.

UNIT 3 SOLAR CHARTS AND SHADING DEVICES 8 Hrs.

Introduction to Sun path diagrams - Angles of Incidence – Shadow angle protractor - Horizontal and Vertical Shadow angles - Shadow Mask - Exercises on plotting shadow angles on sun-path diagrams, Design of shading devices for walls with different orientations.

UNIT 4 DESIGN WITH CLIMATE 6 Hrs.

Climate data analysis for various zones - Design considerations and strategies through case studies - hot and dry; hot and humid; warm and humid; cold and cloudy; cold and dry; moderate/composite. Passive design strategies with respect to different climatic zones in India. Selection of building components based on climate classification – Design strategies and construction parameters for Walls, Roofs & floors surfaces (surface color and texture, U value, exterior absorption / insulation) - material properties, thickness and layers / composite walls.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS 4 Hrs.

Shading design calculations for wall in four different orientations. Comparative analysis of design strategies in traditional and contemporary buildings for a particular climatic region. Introduction to climatic analysis software for energy calculation of designed building envelope for their studio project with climate consultant.

Max. 30 Hours

COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Comprehend the role of climate in architecture and the factors affecting the climate.
- CO2** Acquire knowledge on the climate classification based on the influencing factors.
- CO3** Understand the importance of natural ventilation and day lighting in building design and analyzing their designing strategies.



- CO4** Familiarize the sun as a main design element and understanding the sun path diagram in detail for calculating the heating and cooling hours of a region.
- CO5** Marking the angle of incidence for equinox, summer and winter solstices for arriving the shadow mask and overshadowing in sun path diagram for the design of shading devices.
- CO6** Creating a data base of passive design strategies adapted for different climate zones through a comparative analysis of traditional and contemporary buildings.

TEXT / REFERENCE BOOKS

1. ArvindKrishan, N. B. (2001). CLIMATE RESPONSIVE ARCHITECTURE:A Design Handbook for Energy Efficient Buildings. New Delhi: Tata McGraw-Hill Education India.
2. Evans, M. (1980). Housing, Climate and Comfort . London: Architectural Press.
3. Givoni, B. (1976). Man, climate and architecture (Architectural science series). Applied Science Publishers .
4. MareikeKrautheim, R. P. (2014). City and Wind: Climate as an Architectural Instrument. DOM Publishers.
5. Mark DeKay, G. Z. (2014). Sun, Wind, and Light: Architectural Design Strategies. John Wiley & Sons.
6. Majumdar, M. (2001). Energy-efficient buildings in India. TERI Press.
7. O H Koenigsberger, T. G. (2013). Manual of Tropical Housing and Building: Climate Design. Hyderabad: Universities Press India Pvt. Ltd.



SAR 1203	SITE PLANNING AND ANALYSIS	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 PRINCIPLES OF SITE PLANNING

8 HRS.

Definition of plot, site, region, site planning, units of measurements-Factors influencing a site- Onsite and offsite factors-Topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available- sources of water supply and means of disposal system-Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, patterns, road widths, turning radii, street intersections- movement material, design consideration- Site zoning regulations- Land use regulations-Development control rules of local bodies- building setbacks- FSI- FAR-plot coverage- OSR- parking regulations and standards.

UNIT 2 SITE SELECTION AND ANALYSIS

8 Hrs.

Study of microclimate: Influence of vegetation, wind, landforms and water as modifier of microclimate-Site selection process- Site selection criteria for housing development, commercial and institutional projects- Importance of site analysis- systemic process of site analysis- site suitability analysis- Analysis of natural, cultural, aesthetic factors and visual characteristics- Site analysis diagram- matrix analysis, composite analysis- Grading Contours-contour maps using GIS- slope Analysis, grading process, grading criteria.

UNIT 3 SITE DESIGN AND SITE DEVELOPMENT

8 Hrs.

Site context- contextual analysis responding to programmatic, functional, environmental, aesthetic factors. Integrated approach to design of building and open spaces-relationship of space and mass, enclosure and spatial perception, spatial enclosure- Sense of space- Introduction to land use mapping, existing master plans- types of plans-site layout- Development of Master plan-Site plan.

UNIT 4 CASE STUDIES

6 Hrs.

Data Collection- Detailed analysis of various factors influencing the site- Preparation of Site Analysis diagram- Analysis of built and open space relationship- concept development-circulation network analysis- Site Development Plan for projects in hilly areas, Housing development, Commercial, institutional spaces and factory buildings.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Charles W. Harris, Nicholas T. Dines, Time Savers standards for Landscape Architecture, 1997
2. Edward T.White, Site Analysis: Diagramming information for Architectural design, 1983
3. Joseph DeChiara and Lee Coppleman, Planning Design Criteria, Van Nostrand Reinhold Co Newyork, 1968
4. Kevin Lynch and Gary Hack, Site planning, MIT Press, Cambridge, 1984
5. Punmia B.C, Surveying, Volume1, Standard Book House, New Delhi, 1983

SARA1304	PRINCIPLES OF SITE PLANNING	L	T	P	Credits	Total Marks
		2	1	0	3	100

COURSE OBJECTIVES:

- To impart knowledge on the site planning principles including the features and parameters that govern the proposed development.
- To educate the students in site selection for different building typologies including the techniques of surveying and site analysis.
- To evolve a methodology for site responsive design strategy through the relation between built environment and their immediate surroundings.

UNIT 1 SITE LAYOUT AND PLANNING PRINCIPLES

8 Hrs.

Definition of plot, site, region, site planning, units of measurements-Factors influencing a site- Onsite and offsite factors-Topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available- sources of water supply and means of disposal system-Architectural design consideration and visual aspects. Organization of vehicular and pedestrian circulation, Networks -types of roads, hierarchy of roads, networks, patterns, road widths, turning radii, street intersections.

UNIT 2 SURVEYING AND SITE ANALYSIS

10 Hrs.

Reconnaissance and need for surveying – chain survey, compass survey, plane table & theodolite surveys. Contouring: contour interval, characteristics, uses of contours. Study of site climate – elements of climate. Importance of site analysis- systemic process of site analysis- site suitability analysis- locality plans - Analysis of natural, cultural, aesthetic factors and visual characteristics- Site analysis diagram - Preparation of maps - matrix analysis, composite analysis

UNIT 3 SITE SELECTION AND REGULATIONS

6 Hrs.

Study of microclimate: Influence of vegetation, wind, landforms and water as modifier of microclimate-Site selection process- Site selection criteria for housing development, commercial and institutional projects. Site zoning regulations- Land use regulations-Development control rules of local bodies- building setbacks- FSI- FAR-plot coverage- OSR- parking regulations and standards.

UNIT 4 SITE DESIGN AND DEVELOPMENT TECHNIQUES

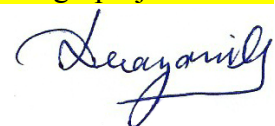
12 Hrs.

Site context- contextual analysis responding to programmatic, functional, environmental, aesthetic factors. Integrated approach to design of building and open spaces-relationship of space and mass, enclosure and spatial perception, spatial enclosure- Sense of space- Introduction to land use mapping, existing master plans- types of plans-site layout- Development of Master plan-Site plan. Case study of the projects in hilly areas, Housing development, Commercial, institutional spaces and factory buildings.

UNIT 5 COMPREHENSIVE LEARNING

9 Hrs.

Understanding the site features by visiting a nearby construction site and manual documentation with photos. Reviewing the given site plan and listing the opportunities on site design and development techniques. Detailed study of their specified site for semester design project on the



Data Collection- Analysis of various factors influencing the site- Preparation of Site Analysis diagram -Analysis of built and open space relationship- concept development- circulation network analysis- Site development.

Max. 30 Hours

COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Familiarize knowledge on the site layout and planning principles that govern the proposed development
- CO2** Students able to understand the importance of surveying and the different methods of surveying with hands on exercise.
- CO3** Preparation of site drawings and analysis of the site for preparing the feasibility of the proposed project
- CO4** Skill development on the site selection criteria with the context and typology specific
- CO5** Preparation of the matrix diagram with the available factors of site context and design development techniques.
- CO6** Exercise on site analysis, site design and development for the given land parcel.

TEXT / REFERENCE BOOKS

1. Dr.B.C.Punmia, A. K. (1983). Surveying Volume 1. New Delhi: Standard book house.
2. Joseph De Chiara, L. E. (1984). Time-Saver Standards for Site Planning. McGraw-Hill .
3. Joseph De Chiara, L. K. (1975). Urban planning and design criteria. Van NostrandReinhold .
4. Kevin Lynch, G. H. (1984). Site Planning. Cambridge: MIT Press.
5. Nicholas T. Dines, K. D. (1998). Time-saver standards for landscape architecture: design and construction data. McGraw-Hill.
6. Shahani, P. B. (1979). Text Book of Surveying: V. II. Oxford & I B H Publication.
7. White, E. T. (1983). Site Analysis: Diagramming Information for Architectural Design. Architectural Media.



SAR4059	COMPUTER STUDIO I	L	T	P	Credits	Total Marks
		0	0	3	2	100

UNIT 1 INTRODUCTION TO IMAGE EDITING 12 Hrs.

Basic Tools for Editing and Creating Graphics in ADOBE PHOTOSHOP - Layers (layer styles opacity- adjustment layers) Basic Retouching (Colour, manipulations, Levels, Curves, Seeing Colour accurately, Patch tool, Cropping ,Reading palettes, Dust and scratches) - Advanced Retouching(smoothing skin, smoothing wrinkles, special colour effects: black and white, sepia, grainy).

UNIT 2 INTRODUCTION TO GOOGLE SKETCH UP & LUMION 12 Hrs.

Importing AutoCAD drawing File in sketch up-Basic Tools for Editing and Creating- Material apply, rendering with advanced VRAY. Importing 3D MODEL in lumion-Basic Tools for Editing and Creating- Material apply, rendering with advanced rendering tool, final walk through making.

UNIT 3 INTRODUCTION TO VISUAL COMPOSITION USING COMPUTER TOOLS 14 Hrs.

Understanding the drawing unit's settings, scales, limits, drawing tools, drawing objects, object editing and text, dimensioning in ACAD.

UNIT 4 PRODUCTIVE TECHNIQUES & DRAWING OUTPUT 7 Hrs.

Transparent overlays, hatching utilities, line type, line weight and colour, Multiline, Polyline, etc.Styles, blocks and symbol library in ACAD, File management, retrieving data, attributes, Layout and plotting.

Max. 45 Hours

TEXT / REFERENCE BOOKS

1. Watt A., Fundamentals of Three-Dimensional Computer Graphics, Addis Wesley, Massachusetts, 1989
2. AutoCAD architectural user guide - Autodesk Inc., 1998
3. AutoCAD 2000: A Problem-Solving Approach, Sham tikoo. Pub: ThomsonLearning,1999
4. Photoshop 7 Bible Professional Edition, Wiley John & Son INC, New York, Deke McClelland, 2000
5. Ralph Grabowski, The Illustrated AutoCAD 2002 Quick Reference
6. Jeffrey Harper, Mastering Autodesk 3ds Max, 2013



SARA2302	COMPUTER AIDED ARCHITECTURAL GRAPHICS - I			L	T	P	Credits	Total Marks
	1	0	2	2	100			
Continuous Assessment	End Semester Examination	Min Pass Marks						
		Continuous Assessment	End Semester Examination	Total				
70	30	35	15	100				

COURSE OBJECTIVES:

- To expose the students to various aspects of computer applications used in Architectural Design and Construction.
- To provide students with the digital skills necessary to efficiently undertake Architectural assignments.
- To develop a proficiency in using computers as a tool for systematic research through analysis and validation and presentation of completed design works

MODULE 1 INTRODUCTION

4 Hrs.

Introduction to various computer aided tools used in Architecture, Advantages and Disadvantages of each - 2D Vector vs Raster graphics- 3D modeling for exploration and presentation- Tools used for converting 2D to 3D - List of techniques used in the field, Possibilities & Importance of each.

MODULE 2 2D DRAFTING TOOLS

16 Hrs.

Introduction to CAD Interface - Basic Understanding of coordinates - Model & Paper space - Understanding drawing commands using mouse and keyboard - Setting up limits and Understanding of Function keys - Exploring drawing unit settings (Imperial & Metric)- Line types: Multiline, Polyline, etc. - Line Styles: Dashed, Dotted, etc. - Understanding of Line Weights, Transparent Overlays, hatching utilities - Use of Color - Styles, Blocks and Symbol Library - Annotations & Dimensions - Control of Drawing - Plot and publish settings - Resources and References

MODULE 3 3D MODELLING

20 Hrs.

Introduction to Sketchup Interface- Importing 2D drawing file into Sketchup - Adjusting Sketchup Settings - Creating and Editing Shapes and Forms - Creating Extrusions, Sweeps and Revolves - Layering, Grouping and Components - Creating textures - Applying materials to objects - Creating and saving styles - Creating plans and sections from 3d model –Geo locating model - Save and Export options - Extensions and Plug-in- Resources and References

MODULE 4 VISUALIZATIONS FOR PRESENTATIONS

16 Hrs.

Importance of presentations in Architecture - Use of Visuals and Process Diagrams in Architecture - Tools used for presentations - Introduction to Photoshop- Interface and Tools- Composing an Image- Artistic vs Technical- Importing and rendering 2d drawings- Textures and tiling- Layer management and Overlaying- Creating depth in 3 dimensional visuals: Lighting, Shadows and Reflections- Masking and cutting- Adding people, trees, sky, objects- Styles and



effects- Techniques of Photo Montage Visualizations- Post production corrections- Save formats- Resources and References

MODULE 5 CONSTRUCTIVE ASSIGNMENTS

4 Hrs.

Draft Recreate 2D drawings of the previous semester's-built form in AutoCAD and create a 3D Sketchup model for the same. Represent in presentation format using Photoshop as a tool and submit as a portfolio for the end semester viva voce.

Max. 60 Hours

COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Achieve proficiency in the basic computer skills relevant in the architectural profession
- CO2** Construct 2D orthographic projections in CAD
- CO3** Visualize design concepts in-the-round and make simple and complex 3D objects
- CO4** Retrieve and present drawings and visualizations appropriately for multiple usages across various platforms
- CO5** Develop diagrams and visuals to express architectural ideas and concepts.
- CO6** Process images and create photo montages for presentation visualizations.

TEXT / REFERENCE BOOKS

1. AutoCAD Architecture User's Guide. (2011). Autodesk, Inc.
2. Grabowski, R. (2001). The Illustrated AutoCAD 2002 Quick Reference. Cengage Learning.
3. SketchUp Hands-on: Student Coursebook. (2016). 3dvinci.
4. Tickoo, S. (1999). AutoCAD 2000: A Problem Solving Approach. Delmar Learning; 1 edition
5. Watt, A. (1991). Fundamentals of three-dimensional computer graphics. Computers and Geosciences.



SAR 4057	DESIGN STUDIO III	L	T	P	Credits	Total Marks
		0	0	14	9	400

COURSE OBJECTIVES

To study the role of anthropological issues that manifest itself in to creation of a community through a detailed investigation of a generic settlement at micro, Meso and Macro level. It sensitizes the mind about the symbiotic relationship between human need and built environment.

FOCUS

Documenting a settlement with strong cohesive character and map various parameters through illustrative diagrams followed by a detailed analysis to generate logical conclusions.

METHODOLOGY PROPOSED

The studio consist of four phase

- Phase I** : Workshop on physical and social surveying
- Phase II** : The students should go for an onsite study of the identified settlement, observe, document and record information. The students should transfer field data in to graphical representation which helps in understanding the settlement holistically.
- Phase III** : The students map the onsite work in the studio and discreetly analyze the available data to understand the physical, social, visual and Architectonic pattern.
- Phase IV** : To propose logical solution for the perceived problems the settlement faces with high degree of sensitivity to the documented information.

DESIGN INTEGRATION

The knowledge students acquire from Vernacular Architecture course would act as a catalyst for initiating the contemplation process.

Max. 210 Hours

TEXT / REFERENCES BOOKS

1. Amos Rapoport, House Form and Culture, Foundations of Cultural Geography, Prentice Hall, Newyork,1969
2. Hassan Fathy, Natural Energy and Vernacular Architecture: Principles and Examples with reference to Hot Arid Climates,University of Chicago Press, Chicago and London, 1986
3. Amos Rapoport, Culture, Architecture, and Design, Locke Science Publishing, 2005
4. MasudTaj H., Nari Gandhi, Foundation for Architecture, Art & Design Book Press, 2009



SARA9301	DESIGN STUDIO III			L	T	P	Credits	Total Marks	
				0	1	9	6	300	
Continuous Assessment	End Semester Examination	Min Pass Marks							
		Continuous Assessment	End Semester Examination						
200	100	100	50						

COURSE OBJECTIVES:

- To understand the relationship between the site and its setting with the built environment
- To generate solutions for a given low rise, multi room space program that are semantic with socio cultural and site-specific context, choice of material and the psychological requirements of the end user.
- To develop an architectural expression which is responsive to the people and environment

STAGE I

The art of decoding and creating spatial configuration of a single use space by understanding human physical, psychological and socio-cultural needs.

STAGE II

Knowledge acclimatization (Phase I) :

Critical analysis as a tool to enable the mind by critiquing selected works of architects for the core values and principle Design and decoding it from a user perspective. Review of literature to give the students the buoyancy to solve the given program.

Iteration and Ideation (Phase II)

Resolving the given Design Program by experimentation and multiple iterations leading to three-dimensional composition by understanding the layers of space making.

Realization (Phase III)

The creation of workable plans and the art of realizing through legible drawings as a medium to communicate the vision, reflecting creative approach drawn from data analysis and climatic consideration to the specific context. Use of a variety of materials and techniques to represent the design.

DESIGN INTEGRATION

Application of the knowledge gained by the students from core courses like Principles of Site Planning and Climatology in developing spatial configurations and its physical relationships.

SUGGESTED TYPOLOGIES (One major & one minor design program.)

Low rise environment like residence / primary health center / school / library / banks / community halls / showroom etc.



TUTORIAL	SOFT SKILLS	8 Hrs.
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Personal Skills-Integrity, adaptability - People's skills- teamwork, communication, respect - Workplace skills- Interpersonal skills- Initiative and enterprise- Professional Skills - Learning Technology - Listening Skills - Motivation skills - Leadership skills- Interpersonal and Team Skills Emotional Intelligence Skills - Expressing ideas -Training and Feedback.

Max. 150 Hours

COURSE OUTCOMES:

On completion of the course the student will be able to

- CO1** Assess the site and surroundings and its relationship with the activity, space for the given architectural program.
- CO2** Analyze and evaluate a design of given space by dissecting the case studies and evolve inferences.
- CO3** Application of anthropology and spatial data for arriving at requirements of the given space.
- CO4** Apply the knowledge on climate responsive building design and implement appropriate design strategies.
- CO5** Build a Process for Design evolution and communicate through drawings – plan, elevation and sections and final presentation with renderings.
- CO6** Evaluation of the design through creation of miniature models and experimentation of space design and 3D through the explored models.

TEXT / REFERENCE BOOKS

1. Alexander, C. (1977). A pattern language: towns, buildings, construction. Oxford university press..
2. De Chiara, J. (2001). Time-saver standards for building types. McGraw-Hill Professional Publishing.
3. Alpern A. (1982), Handbook of specialty Elements in Architecture, McGraw Hill Book.
4. Mills.E.D. (1985), Planning - The Architects Handbook, 10th Edition, British Library Cataloguing.
5. Rafael.M. (2005), Theoretical Anxiety and Design Strategies in the Work of Eight Contemporary Architects, MIT Press



SAR 1301	HISTORY OF ARCHITECTURE III	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 EARLY INDO ISLAMIC PERIOD

8 Hrs.

Advent of Islam in Indian subcontinent, Overview of Development based on political history, Establishment of Delhi Sultanate, Evolution of Architecture under Slave, Khalji, Tughlaq, Sayyed and Lodi dynasties with important examples. Shift of power to the provinces and evolution of Regional Architecture with Examples- Bengal, Gujarat and Malwa, Deccan- Bijapur and Gulbarga with examples.

UNIT 2 INDO ISLAMIC PERIOD

6 Hrs.

Mughals in India, Evolution of Architecture and Outline of Mughal cities, gardens, shape grammar and fractals, Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb- Important examples, Decline of Mughal Empire - Cross cultural influences across India and Secular Architecture of the princely states like Oudh and Vijayanagar.

UNIT 3 RENAISSANCE

8 Hrs.

The Idea of rebirth and revival of Art, Fractals, Architectural character during Early & High renaissance - Study of the life and contribution of the following Architects in brief - Works of Brunelleschi - 'The Dome' of Florence Cathedral - Works of Alberti - Church of Sant' Andrea- Works of Bramante- St.Peter's Basilica (Vatican city) - Works of Andrea Palladio - Villa Capra (Vicenza) - Works of Inigo Jones - Durham's cathedral.

UNIT 4 RENAISSANCE CLASSICISM

8 Hrs.

Outline the Renaissance in transition, Works of Michael Angelo - Laurentian Library (St Lorenzo, Florence); St. Peter's, Rome Outline the Architectural character - St. Paul's Cathedral; Chateau De Chambord; The Louvre, Paris-Study of the life and contribution of Sir Christopher Wren - Sheldonian Theatre (Oxford); St. Paul's Cathedral (London)- rococo Architecture - interiors – hotels.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Sir Bannister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986
2. Christopher Tadgell, The History of Architecture of India from the Dawn of Civilization to the end of the Raj, Orient Longman, UK, London,1990
3. Percy Brown, Indian Architecture (Islamic Period), Taraporevala and Sons, Bombay, 1983
4. Satish Grover, The Architecture of India (Islamic period), Vikas Publishing House Pvt. Ltd., New Delhi,1981
5. Volwahren, Living Architecture, India (Islamic Period), Macdonald & Co, 1969



SARA1401	HISTORY, CULTURE AND BUILT ENVIRONMENT -IV	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To study about the growth of Islam in India and the world-and its impact on art and architecture in India with specific reference to monuments built.
- Develop the understanding of evolution of a temporal building typology through the exhaustive study of a specific type, viz., religious architecture from across the world.
- To study the events this led to the emergence of Renaissance in Europe.
- To comprehend the rich vocabulary of structural systems, architectural manifestation and critically analyze the built forms and the limitations of the building process.
- To study the architectural methods practiced in India are a result of examination and implementation of its established building traditions and outside cultural interactions.

UNIT 1 EARLY INDO ISLAMIC PERIOD

6 Hrs.

Advent of Islam in Indian subcontinent - Overview of Development based on political history - Establishment of Delhi Sultanate - Evolution of Architecture under Slave, Khalji, Tughlaq, Sayyed and Lodi dynasties with important examples focusing on construction techniques. Shift of power to the provinces and evolution of Regional Architecture with Examples- Bengal, Gujarat and Malwa, Deccan- Bijapur and Gulbarga with examples.

UNIT 2 INDO ISLAMIC PERIOD

6 Hrs.

Political history of Mughals- Evolution of Architecture and Urbanism - Mughal gardens - shape grammar and fractal - Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb- Study of important examples. Decline of Mughal Empire - Cross cultural influences across India - Secular Architecture of the princely states like Oudh and Vijayanagar.

UNIT 3 RENAISSANCE CLASSICISM

10 Hrs.

Idea of rebirth and revival – Humanism – Development of thought – the Renaissance patron – Urbanism Renaissance architecture: Brunelleschi and rationally ordered space – ideal form and the centrally planned church: Alberti and Donato Bramante – Merchant Prince palaces: Villa Capra Vicenza – Mannerist architecture: The Renaissance in transition – Michaelangelo : Library at S. Lorenzo, Florence, Capitoline Hill – Inigo Jones- rococo Architecture - interiors – hotels.

UNIT 4 COLONIAL ARCHITECTURE

4 Hrs.

Colonialism and its impact - Indo-Saracenic Architecture and the works of Chisholm: Senate House- Chennai, Victoria Public hall -Chennai, Napier Museum- Trivandrum, Edwin Lutyens' Planning of New Delhi Showcasing Imperial power.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS

4 Hrs.

Map the role of tangible and intangible factors that shaped the architecture during the Islamic and Renaissance era. Sketches / models of different ages-built forms, columns, details and architectural developments. Comparative analysis of provincial style with regional architecture.

Max. 30 Hours



COURSE OUTCOME:**On completion of the course the student will be able to**

- CO1** Outline the planning principles and the construction techniques adopted during the early Islamic period.
- CO2** Summarize the evolution of Mughal architecture and the factors that influence the secular buildings of Princely states.
- CO3** Discuss the manifestations of fractals and shape grammar in Mughal architecture
- CO4** Appreciate the architectural language developed by famous architects during the Renaissance era.
- CO5** Explain the salient features of churches constructed during the Renaissance period with a focus on architectonics.
- CO6** Appraise the influence of colonial architecture that etched in Indian context.

TEXT / REFERENCE BOOKS

1. Fletcher, B. (1986). A History of Architecture, University of London, The Athlone Press
2. Tadgell, C. (1990). The History of Architecture of India from the Dawn of Civilization to the end of the Raj, Orient Longman, UK, London.
3. Brown, P. (1983). Indian Architecture (Islamic Period), Taraporevala and Sons, Bombay.
4. Grover, S. (1981). The Architecture of India (Islamic period), Vikas Publishing House Pvt. Ltd., New Delhi.
5. Volwahren, A. (1969). Living Architecture, India (Islamic Period), Macdonald & Co.



SAR1207	BUILDING SERVICES II	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 INTRODUCTION TO ELECTRICITY

8 Hrs.

Electrical supply system, Supply voltages & classification, voltage tolerance, cables, voltage drop-Electric installations: Relationship between phase & line, voltage and currents. Electrical installation: Principles & practices, Distribution, circuits, building Wiring, use of single phase, two phase, three phase etc. System of connection of appliances & accessories, service connections, generators, invertors -Case studies on electric core.

UNIT 2 ELECTRICITY IN BUILDINGS

8 Hrs.

Main Boards & sub distribution boards for multi storied buildings, Standby power supply distribution, transformers, safety methods, principles and practices- Earthing: definition, types, lighting arrestor and I.S.I specifications planning electrical layout and wiring for buildings. Communication networking and electrical layout for special buildings like Exhibitions, theatres and stadiums - Designing the electrical layout for a building, layout, factors and constraints.

UNIT 3 INTRODUCTION TO LIGHTING

6 Hrs.

Characteristics of light, visual task, factors affecting visual task, synthesis of light, sources Measurements of lighting, Intensity, flux, Work surface, laws of illumination, MSCP, MHCP, colour temperature, colour rendering, space height ratio, depreciation factor, utilization factor day light factor, Natural lighting in architecture.

UNIT 4 LIGHTING

8 Hrs.

Artificial Lighting: Requirements & design, type of lamps, fixtures, preparing a lighting scheme with legend , glare, lighting schemes, types of lighting arrangements, Lumen's method of lighting, luminaire arrangement-Specific Lighting: Flood Lighting, concealed lighting, outdoor lighting, mood lighting, accent lighting, LEDs-Lighting for stores, offices, residences, minimum level of illumination required for physically challenged and visually challenged.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Benjamin Evans, Day light in Architecture, McGraw-Hill Book Company, New York, 1981
2. Hopkinson R.G., Architectural Physics-Lighting, H.M. Stationery Office, London, 1963
3. Millet Marietta, Light Revealing Architecture, Van Nostrand Reinhold, London, 1996
4. Pritchard D.C., Lighting, Longman scientific & Technical, Harlow, 1995
5. Peter Trezenza, and David Loe, The Design of Lighting, E & FN Spon, London, 1998



SARA 1402	BUILDING SERVICES - II	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES:

- To outline the basic principles of Electricity and its application in simple buildings.
- To understand planning and design aspects of electrical services for building typologies.
- To familiarize electrical layout with appropriate fixtures and luminance.
- To integrate the learning in the architectural design.

UNIT 1 INTRODUCTION TO ELECTRICITY

4 Hrs.

Introduction to Relationship between phase & line, voltage and currents (with calculation units), Electrical supply system – Power Plant, HT Distribution, Sub-station-transformer-street pillar box, Sources of power supply - Power supply network diagram, Source to demand -Types of power supply based on consumer demand - Basic terminologies and units, Electrical system components - Estimation of power demand for different building typologies - Architectural spaces for electrical systems like Sub stations, electrical rooms, Transformer yard etc., - Single/Three phase supply - Earthing for safety, types of earthing – ISI specifications

UNIT 2 ELECTRICITY IN BUILDINGS

10 Hrs.

Supply load, Demand load, HT/LT service connections, Ring Mains gear (RMG), Transformer, Power Factor, MV panel room, Switch gear, Main Boards & sub distribution boards, Energy meters, System of connection for appliances, fittings & accessories, Conduits and pipes, safety methods, planning electrical layout and wiring for buildings. Designing the electrical layout for residential building, Needs and types of power backup systems: Diesel gensets, Uninterruptible power supply systems, Photovoltaic cells, Architectural spaces for DG's and UPS - Integration of photovoltaic cells in buildings

UNIT 3 INTRODUCTION TO LIGHTING

6 Hrs.

Basic terminologies and units –Luminous flux, candela , solid angle illumination – visual tasks and factors affecting visual tasks, MSCP, MHCP, colour temperature, colour rendering, space height ratio – modern theory of light – special features and minimum level of illumination for various tasks, Lighting principles, classification of lighting based on activity, source and fixture - Design requirements for different building typologies such as residential, commercial institutional spaces etc - Recommendation from NBC - Case studies.

UNIT 4 LIGHTING

6 Hrs.

Artificial Lighting: Requirements & design, type of lamps, fixtures, types of bulbs, energy efficient lighting options, preparing a lighting scheme with legend, glare, lighting schemes, types of lighting arrangements, Lumen's method of lighting, luminaire arrangement- various types of



Lighting, Lighting for stores, offices, residences, minimum level of illumination required for physically challenged and visually challenged-ECBC requirements.

UNIT 5 CONSTRUCTIVE ASSIGNMENTS

4 Hrs.

Suggested Assignment: Brochure collection of electrical systems and fittings and presentation - Incorporation of studied concepts in the respective semester's Architecture Design studio - Students are expected to have additional sheets on electrical wiring, fittings and lighting drawings

Max. 30 Hours

COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Summarize the relationship between phase and line, voltage & currents and understand the basics about electrical supply system, principles & practices.
- CO2** Understand distribution, supply and connection of various accessories and appliances and prepare an electrical layout for special buildings.
- CO3** Clarify and discuss basic principles, characteristics of light.
- CO4** Analyze and understand natural lighting in space planning and various measurements of light.
- CO5** Identify and appraise various types of lighting for different interior spaces of varied building typologies.
- CO6** Ability to acquire skill required for the students to apply Electrical and Lighting aspects in his/her designs.

TEXT / REFERENCE BOOKS

1. Benjamin Evans, Daylight in Architecture, McGraw-Hill Book Company, New York, 1981
2. Hopkinson R.G., Architectural Physics-Lighting, H.M. Stationery Office, London, 1963
3. R.G.Hopkinson&J.D.Kay, The lighting of Buildings, Faber & Faber, London, 1969
4. Derek Philips, Lighting in Architectural Design, McGraw Hill. New York, 1964
5. Millet Marietta, Light Revealing Architecture, Van Nostrand Reinhold, London,1996
6. Pritchard D.C., Lighting, Longman scientific &Technical, Harlow, 1995
7. Peter Trequenza, and David Loe, The Design of Lighting, E & FN Spon, London,2nd edition, 2004,
8. B.Rajarao, Electricity for architects.
9. Energy Conservation Building Code user guide – ECBC, Bureau of Energy Efficiency, New Delhi, India



SAR4058	DESIGN STUDIO IV	L	T	P	Credits	Total Marks
		0	0	13	9	400

FOCUS

To understand relationship between spaces for a given program and solve the psychological requirements of a small multi room space.

METHODOLOGY PROPOSED

The studio consist of three phases

Phase I : Critical analysis of existing designs, along with review of literature will give the students the buoyancy to solve the given program.

Phase II : Design Projects will challenge students to explore by experimentation and three dimensional composition of primarily abstract compositions. These activities will make use of a variety of materials and techniques to build a solid base of skills.

Phase III : The creation of workable plans and the art of realizing. Legible drawings are made to communicate the vision.

DESIGN INTEGRATION

The knowledge students acquire from Vernacular Architecture course would act as a catalyst for initiating the contemplation process.

Max. 195 Hours

TEXT / REFERENCE BOOKS

1. Christopher W Alexander, A Pattern Language: Towns, Buildings, Construction, Oxford University Press, 1977
2. Joseph DeChiara, Time Saver Standard for building types, McGraw Hill, 2nd Edition, 1980
3. Alpern A., Handbook of speciality Elements in Architecture, McGraw Hill Book, 1982
4. Edward D. Mills, Planning - The Architects Handbook, 10th Edition, British Library Cataloguing in publication Data, 1985
5. Moneo Rafael, Theoretical Anxiety and Design Strategies in the Work of Eight Contemporary Architects, MIT Press, 2005



SARA9401	DESIGN STUDIO IV			L	T	P	Credits	Total Marks	
				0	1	11			7
Continuous Assessment	End Semester Examination	Min Pass Marks							
		Continuous Assessment	End Semester Examination						
200	100	100	50						

COURSE OBJECTIVES

- To determine the role of anthropological issues that manifest itself in the creation of a community through a detailed investigation of a generic settlement at micro, Meso and Macro level. It sensitizes the mind about the symbiotic relationship between human need and built environment.
- To understand the physical space as a manifestation of socio-cultural elements
- Documenting a settlement with strong cohesive character and mapping various parameters through illustrative diagrams followed by a detailed analysis to generate logical conclusions.

METHODOLOGY PROPOSED

STAGE I

Perlustration and Social Audit (Phase I)

The exploration of the character of an identified settlement through observation, documentation of the physical, social, visual and Architectonic pattern and to transfer the recorded Field data into graphical representation for a holistic understanding.

Inquisition and Mapping (Phase II)

The mapping of the onsite work in the studio and discreetly analyze the available data to decode relationship between human needs and the physical, social, visual and architectonic pattern of the settlement.

STAGE II

To propose logical solutions for the perceived problems the settlement faces with high degree of sensitivity to the documented information.

DESIGN INTEGRATION

Application of the knowledge gained by the students from core courses like Vernacular Architecture, History Culture and Built Environment and Building Materials in developing spatial configurations.

TUTORIAL	READING & WRITING SKILLS	8 Hrs.
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Reading skills: Model of reading to learning, reading tactics and strategies, reading purposes – associated apprehensions, reading for meaning (critical reading), reading outcomes, Reading



SUGGESTED TYPOLOGIES

The study could be carried out in a rural or a semi urban settlement which has strong character and lifestyle, influencing the built form.

COURSE OUTCOMES

On completion of the course the student will be able to

- CO1** Comprehend the morphology of a rural settlement over a period of time by understanding elements influencing it.
- CO2** Illustrate the nature and values of generic design as well as the interrelationship between human, society and environmental factors.
- CO3** Apply various methods of conducting surveys and document the physical, visual characteristics and demographic aspects in a holistic manner.
- CO4** Construct a body of knowledge in the vernacular / traditional architecture by decoding local materials and construction techniques.
- CO5** Prescribe interventions for the transformation and give appropriate strategies to address aspirations of the community.
- CO6** Integrate sensitivity in design approach in community-oriented projects with respect to context, collective values and needs.

TEXT / REFERENCES BOOKS

1. Rapoport, A. (1969), House Form and Culture, Foundations of Cultural Geography, Prentice Hall, Newyork.
2. Fathy, H. (1986), Natural Energy and Vernacular Architecture: Principles and Examples with reference to Hot Arid Climates, University of Chicago Press, Chicago and London.
3. Rapoport, A. (2005), Culture, Architecture, and Design, Locke Science Publishing.
4. Taj M.H.&Gandhi.N (2009), Foundation for Architecture, Art & Design Book press
5. Madhavan,C. (2005), History and Culture of Tamil Nadu: Up to c. AD 1310, D. K. Printworld.



SAR 1103	VERNACULAR ARCHITECTURE	L	T	P	Credits	Total Marks
		2	0	0	2	100

UNIT 1 UNDERSTANDING VERNACULAR ARCHITECTURE

9 Hrs.

Definition and classification of Vernacular architecture - Determinants of Vernacular Architecture - Vernacular Architecture as a process - Survey and study of Vernacular architecture: methodology, cultural and contextual responsiveness - approaches to the study of Vernacular architecture: an overview, Aesthetic, Architectural and Anthropological studies in detail - Vernacular principles in contemporary design.

UNIT 2 VERNACULAR ARCHITECTURE IN THE TROPICS

8 Hrs.

Geographic belt between the Tropic of Cancer and the Tropic of Capricorn - land: geography, topographical influence, forestry, presence of water, Settlement Pattern and spatial planning, Building form & orientation, cultural aspects, symbolism, colour, art, construction materials techniques of the following - The Traditional Malay House, Houses in Thailand, Traditional Architecture in Indonesia - Architecture in Kerala (Houses, Theatres & Palaces), & Tamilnadu (Houses / palaces in Chettinad region) - Evolution of the Bungalow from the traditional hut in Bangla.

UNIT 3 VERNACULAR ARCHITECTURE IN THE DESERTS

7 Hrs.

Settlement Pattern and spatial planning, Building form & orientation, cultural aspects, symbolism, colour, art, construction materials techniques of the following - Architecture in North Africa, Arabia and Middle East Europe - Deserts of Kutch and Rajasthan; Havelis of Rajasthan and Gujarat, Bohra Houses, Subterranean Architecture of Gujarat

UNIT 4 VERNACULAR ARCHITECTURE IN THE HILLS

6Hrs.

Historical perspective of hill architecture and its unique attributes and concerns - Major hill settlements in various regions of the world - A broad view of traditional hill architecture of medieval European settlements and other places -An overview of vernacular hill architecture of Himachal Pradesh - Architecture of Houses in North East India - Geographical regions of Kashmir, Hill Architecture, house boats - Vernacular architecture in Nepal.

Max. 30 Hours

TEXT / REFERENCE BOOKS

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997
2. Amos Rapoport, House Form and Culture, Englewood Cliffs, N.J., Prentice Hall, 1969



3. Hassan Fathy, Natural Energy and Vernacular Architecture - Principles and Examples with reference to Hot Arid Climates, University of Chicago Press, Chicago and London, 1986.
4. Fry M. and Drew J., Tropical Architecture in the Dry and Humid Zones. Londres: Bestford, 1964
5. Kulbhushan Jain and Minakshi Jain, Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad, 1992
6. Auroville Charter, Auroville Architecture: Towards New forms, Second Edition, Prisma Publications, 2003
7. Pramari V.S., Haveli - Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989
8. Joseph F. Kennedy, The Art of Natural Building, Design, Construction, and Resources. Gabriola Island, BC: New Society Publishers, 2001

Sevayam

SARA1403	VERNACULAR ARCHITECTURE	L	T	P	Credits	Total Marks
		2	1	0	3	100

COURSE OBJECTIVES:

- To understand the relationship between regional culture and built environment.
- To assimilate the association between environment, culture, geographical settings and their transformation in building typologies.
- To explore the various provocative facts about buildings and its relevance to built form, function and aesthetics.

UNIT 1 UNDERSTANDING VERNACULAR ARCHITECTURE 10 Hrs.

Definition of Vernacular architecture – classification of vernacular Architecture - Determinants of Vernacular Architecture - elements of Vernacular Architecture – approaches to the study of Vernacular architecture - an overview, Aesthetic, Architectural and Anthropological studies - Vernacular principles in contemporary design.

UNIT 2 APPROACHES AND CONCEPTS IN DIFFERENT REGIONS 10 Hrs.

Methodology to survey and study of Vernacular architecture - review of land, geography, topography, cultural and contextual responsiveness in detail - understanding the elements of vernacular architecture and its unique attributes in the tropics, deserts and hilly region - An overview of vernacular architecture in the tropics, deserts and hilly region - settlement pattern and spatial planning, built form and orientation, cultural aspects, symbolism, colour, art, construction materials techniques of the tropics, deserts and hilly region.

UNIT 3 VERNACULAR ARCHITECTURE IN THE TROPICS 10 Hrs.

Analyzing architecture in Tropics - The Traditional Malay House, Houses in Thailand, and Traditional Architecture in Indonesia - Architecture in Kerala (Houses & Palaces), Tamilnadu (Houses / palaces in Chettinad region) Evolution of the Bungalow from the traditional hut in Bangla.

UNIT 4 VERNACULAR ARCHITECTURE IN DESSERTS AND HILLS 10 Hrs.

Architecture in North Africa, Arabia and Middle East Europe - Deserts of Kutch and Rajasthan; Havelis of Rajasthan and Gujarat, Bohra Houses, Subterranean Architecture of Gujarat. Major hill settlements in various regions of the world - Architecture of Houses in North East India - Hill Architecture in Kashmir, house boats - Vernacular architecture in Nepal.

UNIT 5 EXPLORE VERNACULAR ARCHITECTURE 5 Hrs.

Visual observation and brief documentation of small areas/streets, photo documentation of parts of small settlements with rich cultural and architectural characteristics - case studies of leading architects work (vernacular practices)

Max. 45 Hours



COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Memorize and recreate the fundamentals of Vernacular Architecture and its process.
- CO2** Understand and describe the environmental, social, cultural and economic aspects influencing regional architecture.
- CO3** Understand and discuss various theoretical aspects of vernacular Architecture, relate their interconnections and influence in different settlement patterns and spatial planning across the country.
- CO4** Explore the various approaches of regional Architecture, compare and contrast different construction materials and techniques employed in regional Architecture.
- CO5** Assess various concepts of vernacular Architecture with assorted examples from different regions.
- CO6** Construct and demonstrate diverse regional design concepts and to recommend for application.

TEXT / REFERENCE BOOKS

1. Oliver, P. (Ed.). (1997). Encyclopaedia of vernacular architecture of the world (Vol. 3). Cambridge: Cambridge University Press. AmosRapport, House Form and Culture, Englewood Cliffs, N.J., Prentice Hall, 1969
2. Fathy, H. (1986). Natural energy and vernacular architecture, University of Chicago Press, Chicago and London, 1986
3. Fry M. & Drew J.,(1964) Tropical Architecture in the Dry and Humid Zones. Londres: Bestford
4. Jain. K & Jain.M. (1992), Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad
5. Auroville Charter, Auroville Architecture: Towards New forms, Second Edition, Prisma Publications, 2003
6. Pramara V.S.(1989) Haveli - Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad,
7. Kennedy, J. F., Smith, M. G., & Wanek, C. (Eds.). (2014). The Art of Natural Building-- Completely Revised, Expanded and Updated: Design, Construction, Resources. New Society Publishers.



SAR 4061	COMPUTER STUDIO II	L	T	P	Credits	Total Marks
		0	0	3	3	100

COURSE OBJECTIVES:

- To expose the students to various aspects of computer applications into Architectural Design and Construction.
- To explore horizons of technical advances and advantages of computational technologies through the use of computer modeling, rendering and digital fabrication.
- To experience the built form and environment virtually through computer modeling and design construction.

UNIT 1 INTRODUCTION TO REVIT ARCHITECTURE 09 Hrs.

Introduction to Revit - Building Information Modelling - Interface- Working with a Project- Navigation between Views, Basic Drawing and Editing- General Drawing Tools- Editing Revit Elements.

UNIT 2 MODIFYING TOOLS 12 Hrs.

Basic Modifying Tools Setting up Levels and Grid - Creating Levels- Importing CAD files- Creating Structural Grids- Adding Columns, Drawing and Modifying Walls- Creating Exterior Shell- Adding Interior Walls, Doors and Windows- Adding Doors and Windows- Loading Families - Creating Additional Part Sizes, Curtain Walls- Creating Curtain Walls- Adding Curtain Grids- Working with Curtain Wall Panels- Adding Mullions.

UNIT 3 COMPONENT TOOLS 12 Hrs.

Creating Views- Duplicating View - Adding Callout Views- Creating Elevations - Creating Sections, Floors- Creating Floors - Shaft Openings - Sloped Floors, Components - Adding Components, Reflected Ceiling Plans - Creating Ceilings - Soffits - Adding Ceiling Fixtures, Roofs - Creating Roofs - Roofs by Footprint- Reference Planes and Work Planes- Roofs by Extrusion, Vertical Circulation - Adding Stairs - Creating Ramps - Working with Railings - Construction Documentation.

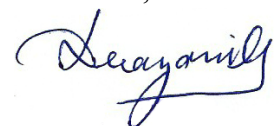
UNIT 4 DIMENSIONING & TEXTING 12 Hrs.

Setting up Sheets - Placing and Modifying Views - Printing Sheets, Annotation - Working with Dimensions - Working with Text - Adding Detail Lines and Symbols, Tags and Schedules - Adding Tags- Rooms and Room Tags - Working with Schedules - Creating Legends, Detailing in Revit - Setting up Detail Views - Creating and Annotating - Details -Keynoting and Keynote - Legends - Patterning.

Max. 45 Hours

TEXT / REFERENCE BOOKS

1. Eddy. Krygiel, Mastering Autodesk Revit Architecture 2011- Wiley Publishing 2010
2. Phil Read, Mastering Autodesk Revit Architecture 2013
3. James Vandezande, Eddy Krygiel, Autodesk Revit Architecture 2013 essentials, 2013



SARA2402	COMPUTER AIDED ARCHITECTURAL GRAPHICS - II			L	T	P	Credits	Total Marks
				1	0	2	2	100
Continuous Assessment	End Semester Examination	Min Pass Marks						
		Continuous Assessment	End Semester Examination		Total			
70	30	35		15		100		

COURSE OBJECTIVES:

- To create 3 dimensional visualizations for effective representation of architectural design
- To develop advanced proficiency in software for architectural design, presentation and building information management.

MODULE 1 COMPUTER RENDERING FOR VISUALIZATIONS 20 Hrs.

Computer Rendering as a technique for Visualizations- Photorealistic vs Stylized Visuals - Introduction to V-Ray - 5 Step Render Workflow - Framing: Photographic Composition - Lighting: V-ray lights, Sun and Professional lighting - Materials: Creation, Properties and Setup - Final Render: Settings for Interiors and Exteriors, Day and Night, Render Elements - Post Production: Corrections and Techniques - Exploring Global Settings, Camera, Environment, Output, Indirect Illumination, VFB channels

MODULE 2 INTRODUCTION TO 3D MASSING 4 Hrs.

Introduction to Revit - Building Information Modelling - Interface- Working with a Project- Navigation between Views, Basic Drawing and Editing- General Drawing Tools

MODULE 3 EDITING AND MODIFYING TOOLS 16 Hrs.

Basic Modifying Tools Setting up Levels and Grid - Creating Levels- Importing CAD files- modifying walls - Adding Interior Walls, Doors and Windows - Loading Families - Creation and modifying on Floors - Roof -Stairs -Ramp -Ceiling -Railings

MODULE 4 COMPONENT TOOLS 16 Hrs.

Setting up Sheets - Placing and Modifying Views - Printing Sheets, Annotation - Working with Dimensions - Working with Text - Adding Detail Lines and Symbols, Tags and Schedules - Adding Tags- Rooms and Room Tags - Working with Schedules - Creating Legends, detailing in Revit - Setting up Detail Views - Creating and Annotating - Details -Keynoting and Keynote - Legends - Patterning.

MODULE 5 CONSTRUCTIVE LEARNING 4 Hrs.

Draft the previous semester-built form in Revit and create a 3D model for the building and represent over all into presentation format with computer render visualizations submitted as portfolio at end semester viva voce.

Max. 60 Hours



COURSE OUTCOME:

On completion of the course the student will be able to

- CO1** Create photorealistic and stylized imagery of architectural objects through computer rendered perspectives
- CO2** Apply efficient workflows for modeling, texturing, lighting and rendering processes required to create architecture visualizations
- CO3** Utilize Revit software for conceptual form finding and massing exercises.
- CO4** Articulate the purpose of BIM and how it is applied in the Autodesk Revit software.
- CO5** Implement representation of objects in architecture model, and work with elevation, section, and 3D views.
- CO6** Generate customizations and templates for repetitive modelling functions.

TEXT / REFERENCE BOOKS

1. Eddy Krygiel, P. R. (2012). Mastering Autodesk Revit 2013 Architecture. Sybex.
2. Lisa DaNaeDayley, B. D. (2013). Photoshop CC Bible. John Wiley & Sons.

A handwritten signature in black ink, appearing to read 'Serayamilly', located in the bottom right corner of the page.