



ARCH 301: Architectural Design – II

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50% OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30% OR 20%)	End Sem University Exam (50% OR 10%)	Teachers Assessment* (50% OR 10%)					
PC	AR	STUDIO	ARCH 301	ARCHITECTURAL DESIGN II				200	200	400			8	8

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

2ND YEAR / III Semester

ARCH 301: Architectural Design – II

Course Educational Objectives (CEOs):

To develop abilities in design in the context of user requirements.

To enhance the understanding of the complexities of architectural design for residential needs and develop creative design solutions for good living environments.

Course outcomes (COs):

<p>At the end of the course, students will be able to</p> <p>Expected Skills / Knowledge Transferred:</p> <p>Focus: Material, Structure & Form</p>	<p>Compare the design and structural principles from natural objects.</p> <p>Explore the inspiration from nature for design with material understanding.</p> <p>Create, from the above exercise, into the design, and construction of a manmade proposal.</p> <p>Use of standards, handling of space, and application of knowledge gained from other subjects in design.</p> <p>The student will study and analyse the design and structural principles of the natural object.</p> <p>The student will explore the inspiration from nature for design.</p> <p>The student will apply the above exercise, to the design, and construction of the man-made proposal.</p>
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Course Overview:

This course is intended to provide skills for designing single-use, small-span and single-storey buildings. This course focuses on buildings for residential use.

Course Contents:

Sr. No.	Syllabus: Topic	Subtopic	Teaching Hours:
Design			
Nature is the source of inspiration for the design. ; The design process and product in nature.; Data collection and compilation analysis inference as an understanding of the design in nature.; The application of the above learning translates into a man-made product. ; Correlation between material, structure and form.; Man-Nature Interface in generating space, place			
I	Theme & Focus of Design:	Theme & Focus of Design: User-activity analysis; context; Functional & aesthetic requirements for the development of design program; Concept & detailed design with a focus on load-bearing structures using brick, stone; timber, etc.; Development of forms through sketches, models, case studies etc.	
	Basic Components:	Basic Components: Behavioral Science; Functionality; Building Materials; Theory of Design; Form Development; Tectonic decisions - Structures, Building Materials, Services; Site Planning; Building Control Regulations; Inclusive Design; Design Communication.	
II	Form Development: Preparatory exercises/ Programmatic and site analysis	Exploring form in architecture; Importance; Principles of design; Evolution; Formulation & massing of multiple volumes in response to functional spaces; Interrelationship between multiple spaces & masses; Elements; Materials; Treatments; Stability. The Minor Exercise will be represented through conceptual development	15 hrs.

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PC	AR	STUDIO	ARCH 301	ARCHITECTURAL DESIGN II				200	200	400			8	8

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

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			(sketches, physical & digital models). Part-Whole relationship – Back and forth design processes Exposure to materials, products, and assembly constructional principles; Site Analysis Site location or context (Inside city/outside city); Cultural and Socioeconomic condition; Climate and Topography; Built/open relation; Distribution of open space/green space; Focused on understanding the interrelationship between some of the fundamental aspects of architecture	
2	Conceptual stage and Schematic design	Design Analysis: Exploration & analysis of existing iconic Residential Architecture; Understanding design philosophy & process; Learning from design quality; Literature/book reviews; Architectural critiques. Explore the relationship between ‘order of structure’ and ‘order of space’. The structure is one of the important factors directly affecting the experience of space. ; Explore the importance of coherence between the rhythms of structure and space.	32 hrs.	
3	Preliminary design to Design development	Understand the relation between various scales of space, forming a rhythm. ; To create a coherent experience, it is important to know how to work with dimensional order which acts as a unifying thread creating consistency between the small and the big. ; Application to know dynamics between different kinds of forces and material properties which play an important role in constructing structures.	50 hrs.	
4	Design Resolution with Synthesis of design parameters	Explore the light as an animator of static space. It has a major influence on the experience of space. ; Explore the ways of taking different kinds of light to enrich the experience.	23 hrs.	

Sessional work:

Guidelines

One Major Monitor Problem is to be set from the entire syllabus
The topic of the project is to be displayed on the Institute Notice Board fifteen days in advance OF the commencement of the classes
At least ONE major exercise and ONE minor design with one - Two-time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems

Assignments:

DESIGN EXERCISE: Single building for 4-6 users involving multiple activities & spaces; Residence for single-family; Complexity of major design - Single building for 4-6 users involving multiple activities & spaces; Typology - Residence for single-family; Site extent - Level site up to 500 m2.

Note:

Necessary theoretical inputs are to be given highlighting the norms and design issues. The topics not covered as design problems will have to be covered by the Studio faculty members through lecture/slideshow sessions and site visits.
Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva - voice In the end exam which is a viva voce, the students have to present the entire semester's work for assessment.

Suggested Readings:

Allen, Edward. How Buildings Work: The Natural Order of Architecture. New York: Oxford UP, 1980.
Bernard Rudofsky, Architecture without Architects
Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1980.
Ching, Francis D. K. Architecture, Form, Space & Order. New York: Van Nostrand Reinhold, 1979.
Ching, Francis D. K. Architecture--form, Space, & Order. Hoboken, NJ: John Wiley & Sons, 2007.
Ching, Francis D. K., Barry Onouye, and Douglas Zuberbuhler. Building Structures Illustrated.
Corbusier, Le, and Frederick Etchells. Towards a New Architecture by Le Corbusier. London: Architectural Pr., 1965.
Corbusier, Le, Stanislaus Von. Moos, Arthur Rüegg, and Robert Venturi. Le Corbusier before Le Corbusier: Applied Arts, Architecture, Interiors,

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Choice Based Credit System (CBCS) Scheme in the light of NEP-2020 by COA

B. ARCH (2021-26)

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PC	AR	STUDIO	ARCH 301	ARCHITECTURAL DESIGN II				200	200	400			8	8

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Painting, and Photography, 1907-1922: Exhibition Guide. New York: Bard Graduate Center for Studies in the Decorative Arts, Design, and Culture, 2002. Print.

Curtis, Nathaniel Cortlandt. Architectural Composition. Cleveland, O.: J.H. Jansen, 1923.

Dodds, George, Robert Tavernor, and Joseph Rykwert. Body and Building: Essays on the Changing Relation of Body and Architecture. Cambridge, MA: MIT, 2002. Encyclopaedia Of Vernacular Architecture by **Paul Oliver**

Field, M. City Architecture; Or, Designs for Dwelling Houses, Stores, Hotels, Etc. In 20 Plates. With Descriptions and an Essay on the Principles of Design. New York: D. Appleton, 1854.

Hardy, Adam. Indian Temple Architecture: Form and Transformation: The Karṇāṭa Drāviḍa Tradition, 7th to 13th Centuries. New Delhi: Indira Gandhi National Centre for the Arts, 1995.

Hassan Fathy, Architecture for The Poor

Johnson, Paul-Alan. The Theory of Architecture: Concepts, Themes & Practices. New York: Van Nostrand Reinhold, 1994

Kirk, Paul Hayden and Sternberg, D. Eugene. Doctors' Offices and Clinics, 2nd Ed. Reinhold Pub., USA, 1960.

Kostof, Spiro. A History of Architecture: Settings and Rituals. New York: Oxford UP, 1985.

Marcel Vellinga & Lindsay Asquith, Vernacular Architecture in The Twenty-First Century

Mark Morris, Architecture and the Miniature: Models, John Wiley & Sons, USA, 2000. National Architectural graphic standards, Ramsey / Sleeper, The American Institute of Architects.

Neufert, Ernst. Neufert Architects Data, Granada Pub. Ltd., London, 1970. Bousmaha Baiche & Nicholas Walliman, Blackwell Science Ltd.

Pallasmaa, Juhani. The Thinking Hand: Existential and Embodied Wisdom in Architecture. Chichester, U.K.: Wiley, 2010.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London, 1976.

Pollio, Vitruvius, and M. H. Morgan. Vitruvius: The Ten Books on Architecture. New York: Dover Publications, 1960.

Rich, Peter Maurice., and Yvonne Dean. Principles of Element Design. Oxford: Architectural, 1999.

Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub. Co. New Delhi, 1996. Sketch Plan Build: World-class architects show how it is done, Harper Design, New York, 2005.

Wittkower, Rudolf. Architectural Principles in the Age of Humanism. New York: W.W. Norton, 1971.

Yacobi, Haim. Constructing a Sense of Place: Architecture and the Zionist Discourse. Aldershot, Hants, England: Ashgate, 2004

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ARCH 303: Building Construction & Materials – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
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BS& AE	TE	THEORY CUM STUDIO	ARCH 303	BUILDING MATERIAL & CONSTRUCTION - III	60	30	30	15	15	150	1		2	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 303: Building Construction & Materials – III

Course Educational Objectives (CEOs):

To introduce and expose the students to various ways in which RCC is used in building construction. The course intends to impart the theory of reinforced concrete construction (in conjunction with the Theory of Structures which is a separate course), and practical knowledge through site visits to the construction sites.

Course outcomes (COs):

<p>At the end of the course, students will be able to</p> <p>Expected Knowledge</p> <p>Skills Transferred:</p> <p>Focus: Advanced Components</p>	<p>Demonstrate basic principles for planning, design and construction of Floors, RCC frame structure and Opening as used in buildings.</p> <p>Explain the principles of the spanning system and their application.</p> <p>Apply requirements and criteria for making openings to build openings with various; materials and techniques</p> <p>Demonstrate basic principles for planning, design and construction of Floors, RCC frame structure and Openings as used in buildings.</p> <p>Explain the principles of the spanning system and their application.</p> <p>Apply requirements and criteria for making openings to build openings with various materials and techniques.</p> <p>To understand the techniques of constructing using different materials</p> <p>The student will develop an understanding of the principle of the frame structure system</p> <p>The student will understand various spanning system</p> <p>The student will develop an understanding of R.C.C</p>
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Course Overview:

The course focuses on understanding the potential as well as shortcomings of RCC as a building material.

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Understanding Floor Systems	Understanding the construction of wooden, steel, precast and RCC floors. ; Various elements of floors: beams, slab, girders etc.; Types of floors: Flat slab, ribbed, metal deck, precast, etc.	15 hrs.
II	Introduction to RCC Framed structure	Basic application skills of Fundamentals of Reinforced Cement Concrete: Superstructure, Horizontal Support Systems: Slab & Roof Systems: Vertical Support Systems: Understanding the construction of an RCC frame structure with all components like footing, columns, beams, slabs, infill walls etc.	12 hrs.
III	Introduction to Materials and its properties	Metal: Properties and use of both ferrous and nonferrous metals. Glass and glass products: Manufacturing of glass, types of glass and their utilisation, etc.	8 hrs.
IV	Doors and windows	Understanding requirements, use and construction of openings (doors and windows) with timber, metal, PVC etc. • Components, assembly and manufacturing of doors and windows based on material and system. • Planning and design criteria related to openings. Advanced Door Types	10hrs.
V	Temporary Structure; Vertical Circulation Elements	Temporary structures such as shoring, strutting, formwork, scaffolding, etc. Steps, staircase, ramp, threshold – definition, types of stairs with different materials, plans, sections, elevations and enlarged details.	

Sessional work:

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BS& AE	TE	THEORY CUM STUDIO	ARCH 303	BUILDING MATERIAL & CONSTRUCTION - III	60	30	30	15	15	150	1		2	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Guidelines

Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

At least two exercises are to be done in the construction yard.

The classwork and home assignments should include appropriate site visits by the students.

The student will maintain field observations/record books.

Assignments:

Each Unit should include a market survey and construction site to visit compulsorily with the studio working on sheets a minimum of 12 to 15 Nos A-1 Sheets

Note:

Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

Suggested Readings:

Barry, R. Construction of Buildings Vol – 1-4: Foundations and Oversite Concrete, Walls, Floors, Roofs. New Delhi: Affiliated East-West Press Pvt. Ltd.,

Biggs, John M. Introduction to Structural Dynamics. New Delhi: McGraw Hill Education India Pvt Ltd, 2014

Ching, Francis D. K. Building Construction Illustrated. Delhi: Wiley India (P) Ltd., 2012

Ching, Francis D. K. Building Structures Illustrated. New York: John Wiley & Sons, Inc., 2014

Ching, Francis D. K. Visual Dictionary of Architecture. Delhi: Wiley India (P) Ltd., 2012

Chudley, R. Building Construction Handbook. Oxford: Butterworth-Heinemann Ltd., 2010

Deplazes, Andrea. Constructing Architecture Materials Processes Structures: A Handbook. Switzerland: Birkhauser- Publisher of Architecture, 2013

Dr R. B. Khasiya. Surveying. : Mahajan Publishing, 2014

Ford, Edward R. Details of modern architecture, Vol. 2: 1928 to 1988. London: MIT Press, 2003

Gorse, Christopher. Dictionary of Construction, Surveying and Civil Engineering. Oxford: Oxford University Press, 2012

Helper, Dana J. Drafting and Design for architecture and construction. New Delhi: Cengage Learning, 2015

Hibbeler, Russell C.. Structural Analysis. India: Pearson Education Asia Pte. Ltd., 2013

Khasiya, R. B; Motiani A. T. Advanced Surveying. Ahmedabad: Mahajan Publishing, 2015

Kotadiya A. S. Building Construction. : Mahajan Publishing, 2014

Kumar, Sushil. Building Construction. New Delhi: Standard Publishers Distributors, 2012

Laursen, Harold L. Structural Analysis. New Delhi: McGraw Hill Education India Pvt Ltd, 2014

Levy, Matthys. Why Buildings Fall: How Structures Fail. New York: W. W. Norton and Co., 2002

McKay J. K. Building Construction Vol – 2-4: Metric. Delhi: Pearson Education Asia Pte. Ltd., 2014

McKay, W. B. Building Construction Vol – 1: Metric. New Delhi: Pearson Education Asia Pvt. Ltd.; India, 2013

McLeod, Virginia. Detail In Contemporary Timber Architecture. UK: Laurence King Publishing, 2010

Millias, Malcolm. Building structures from concept to design. London: Spon Press, 2005

Muttoni, Aurelio. Art of Structures: Introduction to the Functioning of Structures in Architecture. UK: Taylor & Francis, 2011

Pandit, G. S. Structural Analysis: A Matrix Approach. New Delhi: Tata McGraw-Hill Publishing Company Ltd., 2008

Parikh, Janak. Understanding the Concept of Structural Analysis and Design. Anand: Charotar Publishing House, 2000

Paulson, Boyd C.. Computer Applications in Construction. New Delhi: McGraw Hill Education India Pvt Ltd, 2014

Phillips, David. Detail In Contemporary Concrete Architecture. UK: Laurence King Publishing Ltd, 2012

Punaima, B. C.. Comprehensive Design of Steel Structures. New Delhi: Laxmi Publications Pvt. Ltd., 2012

Punmia, B. C. Building Construction. New Delhi: Laxmi Publications Pvt. Ltd., 2008

Rangwala, S. C.. Building Construction. Anand: Charotar Publishing House, 2014

Rangwala, S. C.. Surveying and Leveling. Anand: Charotar Publishing House, 2011

Roof Design. Newyork: DAAB Publication, 2007

Ruske, Wolfgang. Timber Construction for Trade, Industry, Administration: Basics and Projects. Switzerland: Birkhauser- Publisher of Architecture, 2004

Salvadori, Mario. Why Buildings Stand Up: The Strength of Architecture. New York: W. W. Norton and Co., 1980

Sandaker, Bjorn N. Structural Basis of Architecture. UK: Taylor & Francis, 2011

Schillaci, Fabio. Construction and Design Manual Architectural Renderings. Germany: Dom Publishers, 2010

Schodek, Daniel L. Structures. New Delhi: PHI Learning Private Limited, 2014

Shah, M. G. Building Drawing: With an Integrated Approach to Built Environment. New Delhi: McGraw-Hill Publishing Company Ltd., 2013

Shah, M. G.; Padki, S. Y. ; Kale, C. M.. Building Construction Vol - 4: Metric. New Delhi: Tata McGraw Hill Education Ltd., 2015

Watson, Donald. Time-Saver Standards for Building Materials and Systems: Design Criteria and Selection Data. New Delhi: Tata McGraw Hill Education Private Limited, 2009;

Watts, Andrew. Modern construction handbook. New York: Springer, 2013

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ARCH 304:Architectural Graphics & Drawing – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
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PC	SK	STUDIO	ARCH 304	ARCHITECTURAL GRAPHICS & DRAWING -III				75	75	150			3	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 304:Architectural Graphics & Drawing – III

Course Educational Objectives (CEOs):

Visual documentation enables the enhancement of the effective use of graphics and artistic skills for visual communication. Measured drawing helps to develop an understanding of real built spaces and represent them graphically. The objective of this course is to enable the students to learn how to measure and then draw an existing building / Structure / Interior space / Landscape etc. near to the actual. This measurement work is to be done in a group/team.

Course outcomes (COs):

- At the end of the course, students will be able to
 - Choose Tools and Methodology for Measurement.
 - Organize the Collection of Secondary Information and Reconnaissance Survey.
 - Organize Field Data collection.
 - Develop drawings through collected field data.
 - Analyze measured drawings.
- Expected Skills / Knowledge Transferred:
 - To expose the students to a real-world situation and to represent the observation and understanding through graphics, sketches and architectural technical drawings
- Focus: Manual Skills
 - The student will learn different methods and techniques to represent an idea & thoughts
 - The student will have various representation techniques at her disposal
 - The student will be able to represent a design idea 3 dimensionally
 - Use of presentation software

Course Overview:

The course is intended to develop the techniques of an architectural drawing for simple and complex Building Documentation.; Identification of site, Tools and methodology for measurement. Collection of Secondary Information, Reconnaissance Survey. Site measurements, Mapping of Structural details, Materials, Building Elements, Activities, and Supporting Sketches. Preparation of drawings through collected field data. Analysis and inferences from measured drawing.

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Introduction	Introduction to drawing techniques and advanced 2d drafting techniques:	According to the site taken
II	Techniques	Measured drawing:	
III	Documentation	Architectural Documentation:	
IV	Drawings	Plans & Sections of Buildings:	
V	Sketching and Detailing	Sketching	

Sessional work:

Guidelines

Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes
 Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.
 One Major And the rest minor tasks are to be set from the entire syllabus



ARCH 304:Architectural Graphics & Drawing – III

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PC	SK	STUDIO	ARCH 304	ARCHITECTURAL GRAPHICS & DRAWING -III				75	75	150			3	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Assignments: Site Studies – Plot, site, land and regions, size and shape of the site, Analysis of accessibility, Topography, Climate, landforms, Surface Drainage, Soil, Water, Vegetation, Ecology, and Visual aspects.

Note: Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

This is a studio subject and students should be made to prepare a measure to draw about two buildings in detail individually one small and another big project for studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate site visits.

Suggested Readings

Albert O’Halse Architectural Rendering. The Techniques of Contemporary Presentation. By Pub. McGraw Hill Book Company. New York.
 Atkin, William W, Corbelletti, Raniero and Fiore, R. Vincent. Pencil Techniques in Modern Design, 4th Ed. Reinhold Pub. Corporation, New York, 1962.
 Bhatt, N.D. and Panchal V.M. Engineering Drawing: Plane and Solid Geometry, 42nd ed. Charotar Pub., Anand, 2000.
 Billings, Lance Bowen. Perspective-Space and design.
 Burden, Ernest. Architectural Delineation: A photographic approach to presentation, 2nd Ed. McGraw-Hill, Inc., New York, 1982.
 Ching, F. D. K. (2011). A Visual Dictionary of Architecture. 2nd Ed. Hoboken: John Wiley & Sons. ;
 Chitham, R. (1980). Measured Drawings for Architects, Architectural Press, London
 Chitham, R. (1980). Measured Drawings for Architects, Architectural Press, London.
 Claude Batley -Design Development of Indian Architecture
 Conli, Claudius. Drawings by Architects.
 David E. Carter, The Big Book of Design, David E. Carter Books Joyce Rutter Kaye, Design Basics, Rockport.
 Ellen Lopton and Jennefer Cole Phillips, Graphic Design The New Basics, Princeton Architectural Press
 Ernest Burden -Architectural Delineation
 Francis D.K.Ching &Steven P Juroszek, Design drawing, John Wiley & Sons, USA, 1998
 Francis DK Ching, Design drawing, John Wiley & Sons, USA, 1998.
 Gill, P.S. T.B. of Geometrical Drawing, 3rd Ed. Dewan Sushil Kumar Kataria, Ludhiana, 1986 Graphics Book, Rotovision
 Hogarth, Paul. Drawing Architecture.
 I.H. Morris, Geometrical Drawing for Art Students, Orient Longman Chennai.
 Lockard, W. K. (1992). Drawing as a Means to Architecture. 6th Ed. New York: Van Nostrand Reinhold Company.
 M.G. Shah & K.M. Kale, Perspective Principles of Asia publication Mumbai.
 Nichols, T.B. and Keep, Norman. The geometry of Construction, 3rd ed. Cleaver – Hume Press Ltd., London, 1959.
 Pranchlay, H. Perspective
 Rayeuans, Drawing and Painting Architecture Pub. Van Nostrand Reinhold Company, New York
 Shah, M.G., Kale, C.M. and Patki, S.Y. Building Drawing: with an integrated approach to the built environment, 7th Ed. Tata McGraw Hill Pub., Delhi, 2000.
 Shankar Mulik, Perspective & Sciography, Allied Publishers ;
 Thoms, E. French. Graphic Science and Design, New York: McGraw Hill.
 William A. Radford. (2002) Architectural Details and Measured Drawings of Houses of the Twenties. Dover Architecture.

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ARCH 305: History of Architecture & Culture – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
PC	AR	THEORY	ARCH 305	HISTORY OF ARCHITECTURE & CULTURE - II	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 305: History of Architecture & Culture – III

Course Educational Objectives (CEOs):

- To impart knowledge about Indian culture, building art and vernacular construction techniques that would influence the architecture student to develop designs that are rooted in this country and suitable to the lifestyle of its people
- To expose the students to a wide spectrum of architectural styles ranging from prehistoric to the pre-independence period in India.
- To explain to the students the evolution of architecture over time with special emphasis on social, religious and environmental factors.
- To make the students understand the developments in construction technology in different periods.

Course outcomes (COs):

At the end of the course, students will be able to	Demonstrate an understanding of architecture and urban form in settlements of the medieval period Analyse the processes and causes that led to the creation of the architecture of an era Assess the impact of technology on the architecture
Expected Skills / Knowledge Transferred:	Acquire knowledge to identify the common characteristics among the monuments of a particular style. Acquire graphic skills to present a building, analyze its elements and explain the composition. Acquire knowledge of good practices of architecture in the past.
Focus: Medieval World	The student will develop an understanding of architecture and urban form in settlements of the medieval period The student will develop an understanding of architecture in unified cultural systems: universality and abstract models The student will get exposure to the processes and causes that led to the creation of the architecture of the Middle Ages The student will learn about the development of Renaissance principles after the Middle Ages and their expression in building

Course Overview:

- Detailed study & analysis of architectural design fundamentals through significant e.g., in the light of the following for the periods mentioned in the modules –
- The genesis of seed ideas & concepts; Timeline; Socio-political background, key people involved; Climatic & geographic influence; General settlement pattern; Cities & its civic places; Construction technology & material; Design principles; Typology; Evolution; Spatial organization; Form & Detailing.
- The examples, to represent the following historical styles are suggestive & students are encouraged to explore additional e.g., for a comprehensive understanding of the respective styles.

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Gupta & Medieval periods	• Architecture in India in the Gupta & Medieval periods was studied at the scales of settlements, institutions, dwellings and community forms;	6hrs
II	Islamic and Japanese architecture	• Islamic architecture in the Middle East & Central Asia • Japanese Architecture as a comparison of a codified system	8hrs
III	Early Christian Architecture	• The emergence of early Christian architecture towards the end and the fall of the Roman empire and its development into Byzantine architecture	4 hrs
IV	Romanesque	• Romanesque & Byzantine Architecture as the evolution of artisanal craft and	3 hrs

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ARCH 305: History of Architecture & Culture – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50% OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30% OR 20%)	End Sem University Exam (50% OR 10%)	Teachers Assessment* (50% OR 10%)					
PC	AR	THEORY	ARCH 305	HISTORY OF ARCHITECTURE & CULTURE - II	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

V	& Byzantine Gothic	structural principal	• The progress of technology, civilization and philosophy created the architecture of the Gothic era	3 hrs
	Renaissance		• Renaissance in Europe. Early renaissance to high renaissance. Urban structure and space, institute form as an expression of abstract ideas (work of architects like Brunelleschi, Bramante, Michael Angelo etc.) The Renaissance in Europe – Urban structure and space, institutional form an expression of abstract ideas.	3 hrs
	Baroque and Rococo		• Baroque architecture and the development of spatial experience as a complex expression. • Mannerism/ Late Renaissance was influenced by and a reaction to the ideals of Renaissance architecture continuing to develop into Baroque and Rococo	3 hrs

Sessional work:

Guidelines Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

One Major And the rest minor tasks are to be set from the entire syllabus

Assignments: Emphasis should be laid on understating building evolution and form. The continuous evaluation shall be made of students' work based on various models, assignments and sketching

Note: Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

Suggested Readings:

Bagenal, Philip. 1980 The Illustrated Atlas of the World's Great Buildings: A History of World Architecture. S.I.: Leisure.

Braun, Hugh, An Introduction to English Mediaeval Architecture, London: Faber and Faber, 1951

Browne, Edith A. (2005). Romanesque Architecture. Kessinger Publishing

Ching, Francis D.K. Mark Jarzombek and Vikramaditya Prakash. 2007. A Global History of Architecture. Hoboken, NJ: J. Wiley & Sons.

Christy Anderson. Renaissance Architecture. Oxford 2013

Fazio, Michael W., Marian Moffett, Lawrence Wodehouse, and Marian Moffett. 2008. A World History of Architecture Boston: McGraw-Hill.

Ferguson J., Burgess, J., & Spiers, R. P. History of Indian and Eastern Architecture. New Delhi: Munshiram Manoharlal, 1972

Fletcher, 1987. Banister. Sir Banister Fletcher's A History of Architecture. London: Butterworths.

Hale, J.R.; The Civilization of Europe in the Renaissance, 1993

Howard Saalman, Filippo Brunelleschi: The Buildings, London: Zwemmer, 1993

Ilan Rachum, The Renaissance, an Illustrated Encyclopedia, 1979, Octopus

Joachim E. Gaehde (1989). "Pre-Romanesque Art". Dictionary of the Middle Ages

Jones, Tom Devonshire; Murray, Linda; Murray, Peter, eds. (2013). The Oxford Dictionary of Christian Art and Architecture (illustrated ed.). Oxford University Press

Kostof. Spiro. 1985. A History of Architecture: Setting and Rituals. New York: Oxford UP.

Krautheimer, Richard (1986). Early Christian and Byzantine Architecture (4 ed.). Yale University Press

Kubach, Hans Erich: Romanesque Architecture, 1988.

Lowry.B.(1987). Renaissance architecture. New York: Braziller.

Moffett, Marian; Fazio, Michael W.; Wodehouse, Lawrence (2003). A World History of Architecture (illustrated ed.). London: Laurence King Publishing.

Murray, Peter; Architecture of the Italian Renaissance, 1969

Nikolaus Pevsner, An Outline of European Architecture, Pelican, 1964

Norberg-Schulz, Christian and Pier Luigi Nervi. 1971. History of World Architecture. New York: Abrams.

Percy Brown, Indian Architecture (Islamic Period) - Taraporevala and Sons, Bombay, 1983

Tadgell, Christopher. A History of Architecture. London: Ellipsis, 2000.

V.I.Atroshenko and Judith Collins, 1985, The Origins of the Romanesque. (Lund Humphries, London

Ward, John B. 1979. History of World Architecture. London: Faber. Print

Watkin, David (Sep 2005), A History of Western Architecture, Hali Publications

Willis, R. (1835). Remarks on the Architecture of the Middle Ages, Especially of Italy. Cambridge: The Pitt Press.

Wittkower.R.(1998). Architectural principles in the age of humanism. Chichester, West Sussex Academy Editions

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ARCH 306: Climatic Responsive Design

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 306	CLIMATIC RESPONSIVE DESIGN	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 306: Climatic Responsive Design

Course Educational Objectives (CEOs):

To equip the student with a basic understanding of climatic types in India, and the impact on requirements of building design and site planning; to introduce them to the basic science of building design and site planning for thermal comfort, daylighting and natural ventilation; familiarize them with the data, methods, principles, standards and tools for planning and designing for climatic comfort

Course outcomes (COs):

- At the end of the course, students will be able to Explain the role and importance of climate as one of the major determinants of built form.
- Identify climate as a modifying factor of the built environment.
- Comprehend various climate-controlling device
- Expected Skills / Knowledge Transferred: The student should be able to ‘predict’ climatic conditions in a given building (simple residence) and undertake redesign for given parameters. understanding architecture about the natural and built environment.
- Focus: Climatic response of built form Students will understand the role and importance of climate as one of the major determinants of built form.
- The student will understand the climate as a modifying factor of the built environment.
- The student will learn various climate-controlling devices.

Course Overview:

This subject area also known by the term building science in earlier times enlightens the students about the processes by which buildings and entire habitats can be designed to respond to nature, with climate as the basic parameter of design. Science (tools, data, standards, methods and principles) of building design and site planning is related to climate, particularly in tropical climates as found in India.

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Introduction	• Introduction to climatic design: Impact of climate on design:	6 hrs.
II	Bioclimatic design	• Bioclimatic & low-energy design: Understanding the sun path & shading devices, the orientation of the building, openings-sizes, and position. Examples of Low-energy projects & discussion on solar architecture.	6 hrs.
III	Introduction to climatology	Elements of climate, & their impact on global, local, site & building context.Solar Geometry its effect & importance Built environment, conditions, impact and issues of climatic balance in traditional/ vernacular and contemporary built environments. Study of Passive Environmental Control Mechanisms Tropics and its Climatic Zones Macro and Micro Climate (site climate) Energy use & its implications. Introduction to Micro (site) climate. Implications of climatic forces in nature of spaces and forms, patterns of organization, & elements of built form at individual building & collective form. Introduction to urban heat island effect.	6 hrs.

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ARCH 306: Climatic Responsive Design

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 306	CLIMATIC RESPONSIVE DESIGN	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

- IV Thermal Comfort** **Integrated passive design:** **6 hrs.**
 Understanding of the human body’s comfort level. Thermal comfort indices Defining Comfort, Comfort zone & scale. A different way of heat gain in the building. Behaviour & properties of material/s Psychometrics study and analysis. Studies through the built environment, case analysis, theory and its application, models and testing
- V Introduction to simulation software** **6 hrs.**

Sessional work:

Guidelines

Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

The topics here are to be dealt with keeping in mind Indian climatic conditions. NBC and BIS guidelines/standards have to be introduced in all relevant contexts

One Major And the rest minor tasks are to be set from the entire syllabus

Assignments:

Site Studies – Plot, site, land and regions, size and shape of the site, Analysis of accessibility, Topography, Climate,

Emphasis should be laid on understating building evolution and form w.r.t climate. The continuous evaluation shall be made of students' work based on various models, assignments and sketching

Note:

Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

Suggested Readings:

A. Konya- Design Primer for Hot Climates, Architectural Press, London, 1980.
 Ahluwalia, V K. Environmental Science. New Delhi: The Energy and Resources Institute, 2015.
 aureano. Water conservation techniques in traditional human settlements. Ghaziabad: Copal, 2013
 B. Givoni. Man, Climate and Architecture, Architectural Sciences Series – applied, London: Science Publishers Ltd., 1981
 B. Givoni. Passive and Low Energy Cooling of building, New York: Van Nostrand Reinhold, 1994
 Bansal, K N. Mathur, Jyotirmay & Rndall, McMullen. Energy
 Chawla, Shashi. Textbook of Environmental Studies. New Delhi: Tata McGraw Hill Education Private Limited, 2013
 De, Environment Chemistry
 Dekay, Mark, Sun, Wind, And Light: Architectural Design Strategies. USA: John and Wiley Sons, Inc., 2014
 Donald Watson & Kenneth labs – Climatic Design – McGraw Hill New York 1983.
 E. Schild & M. Finbow – Environmental Physics in construction & its application in Architectural Design, Granada, London, 1981.
 Efficient Window Book.
 Galloe, Salam and Sayigh A.M.M. Architecture, Comfort and Energy, U.K: Elsevier Science Ltd., Oxford, 1998
 Koenigsberger, Ingersoll, Mayhew, Szokolay, Manual of Tropical Housing & Building, Hyderabad: Universities Press, March 2010
 Konya, Allan. Design for Hot Climates.
 Krishan A, Baker, Climate Responsive Architecture: Tata McGraw-Hill Education (Asia) Co. & China Architecture & Building Press, 2004/2005
 Kukreja, C.P. Tropical Architecture. Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 1978.
 M. Evans – Housing, Climate & Comfort, Architectural Press, London, 1980.
 Markus, T.A. and Morris. E.N. Buildings, Climate and Energy. Pitman Pub. Ltd., London, 1980.
 Martin Evans, Housing Climate and Comfort, London: Architectural Press, 1980
 Narasimhan, An Introduction To Building Physics
 Nayak, J K. Hazra, R. Prajapati, J. Manual on Solar Passive Architecture. New Delhi: Solar Energy Centre, MNES, Gov. Of India, 1999
 Olgay, Victor. Design With Climate – Bio-Climatic Approach to Architectural Regionalism. New Jersey: Princeton University Press, 1963
 Olgay and Olgay. Solar Control and Shading Devices.
 Oliver, Paul. Built to meet needs: cultural issues in vernacular architecture: Burlington, Elsevier. 2006 16. Majumdar, Mili. Energy Efficient Building in India. New Delhi: The Energy and Resources Institute.
 Passivhaus Designer's Manual: A Technical Guide to Low and Zero Energy Buildings: Routledge Taylor & Francis Ltd.

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ARCH 306: Climatic Responsive Design

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 306	CLIMATIC RESPONSIVE DESIGN	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Rajagopalan, R. Environmental Studies: From Crisis to Cure. New Delhi: Oxford University Press,2011

Shah. M G, Padki. S Y, Kale, C M, Building Drawing: with an integrated approach to building environment, New Delhi: Tata McGraw-Hill Education, 2002

Sharma and Kaur, Environmental Pollution

Tipnis, Aishwarya. Vernacular Traditions- Contemporary Architecture. New Delhi: The Energy and Resources Institute, 2012, Print.

Desai, Madhavi. Traditional Architecture: House from the Islamic Community of Bohra in Gujarat. Maharashtra: National Institute of Advanced Studies in Architecture (NIASA), COA,2007

Dekay, Mark, Sun, Wind, And Light: Architectural Design Strategies. USA: John and Wiley Sons, Inc., 2014

Olgay, Victor. Design With Climate – Bio-Climatic Approach to Architectural Regionalism. New Jersey: Princeton University Press,1963

Moore, Fuller. Concepts and practice of architectural daylighting. New Delhi,New York: Van Nostrand Reinhold 1991

Steane, Mary Ann. The architecture of light: recent approaches to designing with natural light Book.London: Routledge, 2011

Zaretsky, Michael. Precedents in zero-energy design: architecture and passive design in the 2007 solar decathlon. London & New York: Routledge,2010

Goswami, D. Yogi, Principles of solar engineering. New York Taylor and Francis group 2000



ARCH 307: Theory of Structures – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 307	THEORY OF STRUCTURE - III	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 307: Theory of Structures – III

Course Educational Objectives (CEOs):

To impart sound knowledge of strength, the behaviour of various materials and techniques in the analysis of structures.

Course outcomes (COs):

At the end of the course, students will be able to Develop to gain understanding by using the abstract method of analysis of structures

Evaluate basic requirements of stability and strength of materials.

Evaluate structural elements and their importance in Structural Systems.

Expected Skills / Knowledge Transferred: Ability to analyze the standard members of structures.

Focus: Environment –

built –human relationship The student will develop conceptual understanding by using the abstract method of analysis of structures.

The student will develop an understanding of the basic requirement of stability, the strength of the material

The student will learn the behaviour of basic structural elements and their importance in the Structural System.

Course Overview:

Gives an in-depth understanding of the concepts associated with different Elements of Structures.

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Analysis of indeterminate structures. Introduction to stiffness and distribution factors, introduction to moment distribution factors, introduction to the moment distribution method.	Indeterminacy of a frame, comparison of post and lintel system and portal frames. Importance of portal frames in resisting horizontal forces	6 hrs
II	Concept of Centre of gravity	Determining the centroid of simple figures. • Moment of inertia, its application to sections subjected to bending, determining M.I. of simple and compound sections	6 hrs
III	Resolution of forces	Concept of triangulation and its application in pin-jointed trusses The assumption in the strength of materials, basic terminology, and a brief history of strength of materials. Concept & importance of the shear force and the bending moment. Pure Bending stress & combined direct and bending stresses Continuous beams: moment Distribution Method: Kani’s method / Rotation Contribution Method: Columns and Struts: wind pressure on chimneys, Maximum and minimum intensities of stress at the bottom of chimneys Retaining walls subjected to earth pressure.	6 hrs
IV	Stability, buckling of columns	short and long columns Deflection and its importance, code provisions, and the study of the deflected shape of simple structures. Solutions to problems.	6 hrs
	Concept of shear stress	average and maximum shears stress. Horizontal shear stress and its variation across the cross-section of the beam. Torsion of Shafts: The arch is a curved element. Arch in history, the efficiency of an arch. Three hinged arches. Simple	6 hrs

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ARCH 307: Theory of Structures – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 307	THEORY OF STRUCTURE - III	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

V	Composite sections	<p>problems to illustrate the importance of the shape of an arch, rise end conditions, loading</p> <p>Sections made up of more than one material</p> <p>Steel as a structural material, structural systems in steel with case studies.</p>	6 hrs
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Sessional work:

Guidelines

Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

One Major And the rest minor tasks are to be set from the entire syllabus

Assignments:

Site Studies and Visual aspects. Numerical and understanding of structural concepts

Note:

The continuous evaluation shall be made of students' work based on various models, assignments, and sketching

Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

Suggested Readings :

A.K.Jain and Punmia. Strength of Materials
 Ambrose, James E. Building Structures. New York: Wiley, 1988.
 Bali, N. P., Textbook of Engineering Mathematics, New Delhi, Laxmi Publications Pvt. Ltd., 2011
 Biggs, John M., Introduction to Structural Dynamics, New Delhi, McGraw Hill Education India Pvt Ltd, 2014
 Charleson, Andrew., Structure as Architecture: Sourcebook for architects and structural engineers, London, Taylor & Francis, 2015
 Corkill, P. A., H. L. Puderbaugh, and H. K. Sawyers. Structure and Architectural Design. Iowa City: Sernoll, 1974.
 Cowan, Henry J. Architectural Structures: An Introduction to Structural Mechanics. New York: Elsevier, 1976.
 Deplazes, and Söffker. Constructing Architecture: Materials, Processes, Structures. Basel: Birkhäuser Verlag, 2013. .
 Deplazes, Andrea. Constructing Architecture Materials Processes Structures: A Handbook, Switzerland, Birkhauser- Publisher of Architecture, 2013
 Gordon, J. E. The New Science of Strong Materials, Or, Why You Don't Fall through the Floor. Princeton, NJ: Princeton UP, 1984.
 Hibbeler, Russell C., Structural Analysis, India, Pearson Education Asia Pte. Ltd., 2013
 Hunt, Tony. Tony Hunt's Structures Notebook. Oxford: Architectural, 2003.
 IS 1905, Code of Practice for Structural Safety of Buildings.
 IS 456:2000, Indian Standard, Plain and Reinforced Concrete – Code of Practice, Bureau of Indian Standards.
 James Ambrose, Building Structure, Canada Wiley, 2012
 Junnarkar, S. B., Mechanics of Structures Vol – 1, Anand, Charotar Publishing House, 2012
 Khurmi, R. S., Strength of Materials: Mechanics of Solids, New Delhi, S. Chand & Company Ltd., 2013
 Kumar, Ashok, Theory of Structures, New Delhi, Laxmi Publications Pvt. Ltd., 2004
 Laursen, Harold L., Structural Analysis, New Delhi, McGraw Hill Education India Pvt Ltd, 2014
 Levy, Matthys, Why Buildings Fall: How Structures Fail, New York, W. W. Norton and Co., 2002
 Mainstone, R. J. Structure in Architecture: History, Design, and Innovation. Aldershot, Hampshire: Ashgate, 1999.
 Millais, Malcolm. Building Structures: From Concepts to Design. London: Spon, 2005.
 Miret, Eduardo Torroja, J. J. Polivka, and Milos Polivka. Philosophy of Structures: English Version by J.J. Polivka and Milos Polivka. Berkeley, CA: U of California, 1962.
 MORGAN, Elements of Structures
 Morgan, William, Daniel Williams, and Frank Durka. Structural Mechanics: A Revision of Structural Mechanics. Harlow: Longman, 1996.
 National Building Code of India, 1983
 Pandit, G. S., Structural Analysis: A Matrix Approach, New Delhi, Tata McGraw-Hill Publishing Company Ltd., 2008
 Pandya, N. C., Steam Tables: Entirely in SI Units including Mollier Chart, Anand, Charotar Publishing House, 2013
 Parikh, Janak, Understanding Concept of Structural Analysis and Design, Anand, Charotar Publishing House
 Punmia, B. C., Comprehensive Design of Steel Structures, New Delhi, Laxmi Publications Pvt. Ltd., 2012
 Ramamrutham, S., Theory of Structures, Delhi, Dhanpat Rai & Sons, 2013
 Reddy, C.S. Basic Structural Analysis, 18th Ed. Tata McGraw Hill Pub. Co.Ltd., New Delhi, 1991.
 Rosenthal, Hans Werner., and Hans Werner. Rosenthal. Structural Decisions: The Basic Principles of Structural Theory, Their Application to the Design of Buildings and Their Influence on Structural Form. London: Chapman & Hall, 1962.

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Shri Vaishnav institute of Architecture
 Choice Based Credit System (CBCS) Scheme in the light of NEP-2020 by COA
B. ARCH (2021-26)

ARCH 307: Theory of Structures – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 307	THEORY OF STRUCTURE - III	50	20	30			100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Salvadori, Mario, and Robert A. Heller. Structure in Architecture: The Building of Buildings. Englewood Cliffs, NJ: Prentice-Hall, 1975.
 Salvadori, Mario, Saralinda Hooker, and Christopher Ragus. Why Buildings Stand Up: The Strength of Architecture. New York: Norton, 1980.
 Sandaker, Bjørn Normann, and Arne Petter. Eggen. The Structural Basis of Architecture. New York: Whitney Library of Design, 1992.
 Sarkisian, Mark P. Designing Tall Buildings: Structure as Architecture. New York: Routledge, 2012.
 Schodek, Daniel L. Structures. Englewood Cliffs, NJ: Prentice-Hall, 1980.
 Seward, Derek. Understanding Structures: Analysis, Materials, Design. Basingstoke: Palgrave Macmillan, 2003.
 SP – 16, Design Aids for Reinforced Concrete to IS 456
 Steel Design, Newyork, DAAB Publication, 2007
 Subramanian, N., Design of Steel Structures, New Delhi, Oxford University Press, 2012
 Watson, Donald, Time-saver Standards for Building Materials and Systems: Design Criteria and Selection Data, New Delhi, Tata McGraw Hill Education Private Limited, 2009

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ARCH 308: Computer Application I

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
SEC	SK	STUDIO	ARCH 308	COMPUTER APPLICATION I				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 308: Computer Application I

Course Educational Objectives (CEOs):

The course imparts basic knowledge of computers to upgrade the general understanding and ability in computing in the realm of architecture. To enhance the visualizing skills of the students by exposing them to the latest modelling software.

Course outcomes (COs):

- At the end of the course, students will be able to Utilize two-dimensional digital software (Auto CAD, Illustrator, Photoshop or equivalents)
- Maximize possibilities of representation on an analytical level.
- Imagine complex forms using software (Auto CAD, Rhino or equivalents) and be able to manifest them in a physical model.
- Expected Skills / Knowledge Transferred: / Developing overall skills in various computer-aided tools, processes and presentations.
- Focus: Computer Skills The student will become adept at using CAD software for drafting
- The student will be able to create digital 3d models

Course Overview:

The course provides the foundation and capability to represent the concepts three-dimensionally. Sketching Techniques

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Representation Techniques using drafting software (Auto CAD or equivalent) CAD Drafting (e.g., AutoCAD, ArchiCAD, Rhino, Vector work, etc.)	Fundamentals of CAD Drafting (Setting up Scale and units, Working With Layers, Line weights, Composition of different scaled drawings in a single sheet, Plotting etc.) Advanced Geometry, Patternmaking and analysis Uses of computer-generated drawings to execute basic design ideas (Physical model & Drawings)	6 hrs
II	Understanding complex forms & Surfaces (AutoCAD 3D, Rhino or equivalent)	Loft, sweep, Doubly curved surfaces Interpenetrations of Solids (Interpenetrations of Flat & Curved Surfaces, Interpenetrations of solid forms) Multiple Section Method (Digital model, Physical model & Drawings)	6 hrs
III	Representation Techniques using other software (Photoshop, Illustrator, In-design or equivalent)	Understanding the difference between Raster & vector-based software Exploring the idea of rendering, composing and compiling architectural work.	6 hrs
IV	CAD Modeling, I (e.g., Sketch-Up, etc.)	Understanding the software basics to handle Exploring the idea of rendering, composing and compiling architectural work.	
V	3D Rendering & Architectural Visualization (Vray, 3D Max, Lumion,	Understanding the software basic to handle Exploring the idea of rendering, composing and compiling	

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ARCH 308: Computer Application I

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
SEC	SK	STUDIO	ARCH 308	COMPUTER APPLICATION I				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

etc.)Illustrator For Final architectural work. Presentation

Sessional work:

Guidelines

Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

One Major And the rest minor tasks are to be set from the entire syllabus

Assignments:

Continuous Evaluation shall be made of students' work based on various models, sketches assignments Min Of 8 Assignments

Note:

Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

Suggested Reading:

Botello, C. (2011). Adobe Illustrator CS5 illustrated. Boston: Cengage Learning.
 Daniel Tal., Rendering in SketchUp. Wiley
 Farrelly, L. (2008). Representational techniques. Lausanne: AVA Book.
 Gladfelter, Donnie. AutoCAD 2013 and AutoCAD LT 2013: No Experience Required. Indianapolis, IN: Wiley, 2012.
 Helsel, J. D. (2007). Engineering drawing and design. Place of publication not identified: Glencoe Mcgraw-Hill Post.
 John, E. (2013). CAD fundamentals for architecture. London: Laurence King Publishing.
 John, Elys. CAD Fundamentals for Architecture. London: Laurence King, 2013.
 Onstott, S. (2011). Enhancing architectural drawings and models with Photoshop. San Francisco: Wiley Pub.
 Onstott, S. (2012). AUTOCAD 2013 AND AUTOCAD LT 2013: ESSENTIALS. Hoboken, NJ: John Wiley & Sons.
 Pottmann, H., Asperl, A., Hofer, M., & Bentley, D. (2009). Architectural geometry. Exton: Bentley Institute Press.
 Scott Onstott. Enhancing architectural drawings and models with Photoshop. Sybex



ARCH 309: Building Systems and Services –III Electrical & Mechanical

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 309	BUILDING SYSTEMS AND SERVICES-III (ELECTRICAL & MECHANICAL)	50	20	30	20		100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 309: Building Systems and Services –III Electrical & Mechanical

Course Educational Objectives (CEOs):

To gain knowledge regarding the layout of utilities and services in the building envelope, the functioning of services and their applications in the building

Course outcomes (COs):

At the end of the course, students will be able to

- Understand basic knowledge of ventilation and techniques (natural/mechanical) of air conditioning.
- Apply the working principles of various mechanical systems of air conditioning.
- Outline various components of a typical electrification system for a building.
- Identify the relevant standards for quantification and representation of the electrical system for a building.
- Analyze various literature, case studies, and site visits to understand HVAC and Electrification in a building
- Acquire knowledge of good practices in services for better layout planning
- The student will understand the principles of artificial light & electrification
- The student will learn the methods of Heating & cooling devices for natural and artificially ventilated building design
- Students will learn the principles of firefighting

Course Overview:

Study of Building Services and Utilities generally installed in buildings and their role in enhancing the utilitarian value of the buildings. The study focuses on understanding basic working, principles, terms and definitions, as well as practical aspects and solutions utilized in architecture

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
I	Contemporary Building Services: Intelligent Buildings:	Concept & use; sensors – working & application in, security & safety systems & general energy efficiency. Building management/automation systems: principles, working & integration in building design, IBMS; reticulated gas systems. It services communication systems, CCTV, wireless systems; digital systems.	6 Hrs.
ii	H.V.A.C. [Heating, Ventilating, Air-Conditioning And Cooling]:	Mechanical thermal controls, their type, and their effects on heating ventilating, air-conditioning or cooling an enclosed space. Air-conditioning or cooling systems, various types of practice, chilled water cooling system air handling package unit & their installation, demand and consumption as peruse & volume of space. Supply plants and service layouts, supply and return air’s ducting and channelling systems, calculations for consumption and basic sizes of components	6 Hrs.
III	Artificial Light, Electrification &	Basic electrical supply & distribution to the building, alternate supply & power connections. Various components & elements of layouts as peruse, lifesaving auto-cut circuits & other fixtures.	6 Hrs.

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ARCH 309: Building Systems and Services –III Electrical & Mechanical

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS& AE	TE	THEORY	ARCH 309	BUILDING SYSTEMS AND SERVICES-III (ELECTRICAL & MECHANICAL)	50	20	30	20		100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

IV	Communication Network: Lighting Aspects Of A Building	Communication systems like fax, telecom, EPABX, alarm, audio-video monitoring, etc. & their layouts. Criteria for designing various communicating service layouts Sunlight, Its Principles, Radiation Spectrum Vision, Colors And Visual Comfort Day-Lighting In Buildings, Its Sources, Lighting Criteria, The Visual Field, Behavior-Transmission, Reflection Daylighting Factor, Prediction Methods Physics Of Light, Photometry Artificial Lighting, Lighting Levels For Various Activities	6 Hrs.
V	Firefighting & Protection:	–Fire Protection Systems, Study Of Firefighting Regulations, Fire Alarming & Extinguishing System, Fire Hydrants-Their Types, Location, Spacing, Distance & Specifications. Fire Resistance Of Different Building Materials, Designing Of Fires Resistant Doors, Gangways, And Stair and Lift Blocks For Escape. Case Studies Of Service And Escape Layouts Of Buildings For Fire Protection Systems and requirements.	6 Hrs.

Sessional Work:

Guidelines Assignments /Tasks Are To Be Set From The Entire Syllabus; The Topic Of The Project Is To Be Displayed On The Institute Notice Board Fifteen Days - A Week Time In Advance Of The Commencement Of The Classes
Continuous Evaluation Shall Be Made Of Students' Work Based On Various Models, Sketch Assignments, And Market Surveys.

Assignments: One Major And The Rest Minor Tasks Are To Be Set From The Entire Syllabus
Emphasis should be laid on understating building evolution and form. The continuous evaluation shall be made of students' work based on various models, assignments and sketching

Note: Evaluation Is To Be Done Through Viva Voce By An External Examiner Appointed By The University At The Institute. Portfolios, After The University Exam, Shall Be Retained At The Institute Level For The Viva-Voice

Suggested Readings:

Bovay. H.E., Handbook of Mechanical and Electrical Systems for Buildings New York: McGraw Hill
 Dr Frith Abnwo and others, Electrical Engineering hand Book
 Dr.V. Narasimhan – An introduction to Building Physics- Kabeer ing works, Chennai -5
 E.R.Ambrose, Heat pumps and Electric Heating, John and Wiley and Sons Inc, New York, 1968.
 Electrical Wiring and Contracting (Vol.1 to Vol.4), London the New Era Publishing Company.
 Grondzik, Walter T. Mechanical and electrical equipment for buildings.Canada: John and Wiley Sons, Inc.,2015
 Handbook for Building Engineers in Metric systems, NBC, New Delhi, 1968.
 Howell, Ronald H. & others. Principles of heating Ventilating and air conditioning: a textbook with design data based on the 2009 ASHRAE handbook - fundamentals. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 2009
 Parker, Steve.Electricity.Lon don: Dorling Kindersley,2013
 Philips Lighting in Architectural Design, McGraw Hill, New York, 1964.
 Prakash, N. Sessa.Manual of Fire Safety.New Delhi: CBS Publishers and Distributors,2011
 R.G.Hopkinson and J.D. Kay, the Lighting of Buildings, Faber, and Faber, London, 1969.
 Roberts, Victor & Krepchin, Ira Eds. lighting: technology atlas Book. Colorado: Platts research and consulting., 2005
 Sugarman, Samuel C.Testing and balancing HVAC air and water systems.Lilburn: Taylor & Francis,2014 Classics, Jan 2007
 William. J. Guinness, Mechanical and Electrical Equipment for Buildings, New York: Willey
 Dekay, Mark, Sun, Wind, And Light: Architectural Design Strategies. USA: John and Wiley Sons, Inc., 2014
 Olgay, Victor. Design With Climate – Bio-Climatic Approach to Architectural Regionalism. New Jersey: Princeton University Press,1963
 Laureano.Water conservation techniques in traditional human settlements.Ghaziabad: Copal,2013
 Livingston, Jason. Designing with light: the art, science, and practise of architectural lighting design. Canada: John and Wiley Sons, Inc.,2014
 Muneer, T. & others.Windows in buildings: thermal, acoustic, visual and solar performance. Oxford, Amsterdam, New York: Architectural Press 2000

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ARCH 309: Building Systems and Services –III Electrical & Mechanical

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
BS&AE	TE	THEORY	ARCH 309	BUILDING SYSTEMS AND SERVICES-III (ELECTRICAL & MECHANICAL)	50	20	30	20		100	2			2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Moore, Fuller. Concepts and practice of architectural daylighting. New Delhi, New York: Van Nostrand Reinhold 1991

Steane, Mary Ann. The architecture of light: recent approaches to designing with natural light Book. London: Routledge, 2011

Zaretsky, Michael. Precedents in zero-energy design: architecture and passive design in the 2007 solar decathlon. London & New York: Routledge, 2010

Goswami, D. Yogi, Principles of solar engineering. New York Taylor and Francis group 2000

Tregenza, Peter; Loe, David. Design of lighting Book. Oxon: Taylor & Francis, 2009 Edwards, Brain Ed. Green buildings pay Book. London: Spon Press, 2003



ARCH 310: Study Tour II

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment+ (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment+ (50%OR 10%)					
SEC	SU	PROJECT	ARCH 310	STUDY TOUR II VILLAGE DOCUMENTATION				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S - Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 310: Study Tour II

Course Educational Objectives (CEOs):

To analyse various art forms, and understand the techniques involved in creative thinking.

Course outcomes (COs):

At the end of the course, students will be able to Get exposure to the various built environments at different places of architectural relevance across the state, region, country and the world.

Apprise the relevance of the built environment by observing & photo documentation of selected places

Expected Skills / Knowledge Transferred: different skills for creative thinking, understanding various art forms and appreciating art and architecture. a paper presentation and a summer case study

Focus: Manual Skills Students will get an understanding of the “synthesis of learning from various courses” by observing; registering & mapping built buildings.

The programme outcome will be extremely valuable in creating a knowledge base in the architecture field not only in India but in nearby countries as well.

Production of Accurate and precise drawings of many a monument, institutions, and settlements in India, which become a basis for future research.

Provides knowledge on the traditional art form, innovations in and influences on architecture and thinking process in design;

Course Overview:

Students will develop the skills & understanding of measure drawing.

Course Contents:

Unit Syllabus: Topic Subtopic

Teaching Hours:

The STUDY TOUR (SBP) at the Institute of Architecture is a unique contribution to Architectural education. Initially called measure drawings, it is intended to take the students out into the field to get a first-hand experience of traditionally built environments. This subject recognizes the value of traditional architecture as well as the importance of field experiences and travels in the learning of architecture. The students are encouraged to learn about not only the architectural form but also related components of architectural relevance.

- Student and faculty members stay at the selected Village for 8 to 15 days.
- Students will get a comprehensive awareness of that village.
- Students will measure the built environment in terms of a cluster of houses, individual houses, and building elements of that house.
- Students will also document the social, cultural, and environmental aspects of that village.
- Students came back to the institute and made the final Drawings and reports within the remaining days.

Sessional work:

Guidelines

Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

One Major And the rest minor tasks are to be set from the entire syllabus



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Shri Vaishnav institute of Architecture

Choice Based Credit System (CBCS) Scheme in the light of NEP-2020 by COA

B. ARCH (2021-26)

ARCH 310: Study Tour II

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
SEC	SU	PROJECT	ARCH 310	STUDY TOUR II VILLAGE DOCUMENTATION				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Assignments:

Evaluation: Stages: Proposal and on final submission of the paper /DOCUMENTATION of places visited Students contribute to the topic/area is of critical importance.
 Site Studies – Plot, site, land and regions, size and shape of the site, Analysis of accessibility, Topography, Climate, landforms, Surface Drainage, Soil, Water, Vegetation, Ecology, and Visual aspects.

Note:

Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice
 detailed out as per the academic calendar; a paper presentation on any subject of interest in the core or elective subjects.; The student needs to identify an area for research and in consultation with a guide propose first. On approval, this is to be developed through the summer and culminate as a research paper. Requirements (from students): Proposal, reviews, final presentation and paper.; a summer case study where the student has to select a built building by one of the architects and have a live document of the building and analyse the building and a Word of the concept according to the architect.

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ARCH 319: Elective – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
SEC	SU	THEORY /STUDIO	ARCH 319	ELECTIVE- III (POOL II)				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ARCH 319: Elective – III

3 Sem	Elective- III (Pool III)
319.1	Ergonomics
319.2	Architecture And Human Behaviour
319.3	Advanced Computing Techniques In Design
319.4	MOOC: Build With Hunnarshala/Chaukat, Darwaza& Jharoka: Acedge

Course Educational Objectives (CEOs):

overall nurturing of the student with issues in practice and field outside

Course outcomes (COs):

At the end of the course, students will be able to overall nurturing of the student with issues in practice and field outside

Expected Skills / Knowledge Transferred: better grooming than just books and theories.

Focus: Manual Skills better grooming than just books and theories

Course Overview:

The following is a representative list of Institute projects: Seminars, Tutorials/ additional classes for any course, Guest Lectures, Workshops, Providing knowledge to support students being sensitive to design;

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
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The creative electives provide an opportunity to express talents that are different from architecture but related to imagination, visualization & creation. They offer hands-on experience of unique ingenuity & workmanship. The essence of a creative domain can be achieved by exploring different materials, techniques, and processes; developing creative products; and finishing & presenting the product for the concepts that evolved. The outcome will be through portfolio & presentations.

- As Per Pool Electives Choices Stage II odd semester pool

Sessional work:

Guidelines Assignments /Tasks are to be set from the entire syllabus; The topic of the project is to be displayed on the Institute Notice Board fifteen days - a week time in advance OF the commencement of the classes

Continuous Evaluation shall be made of students' work based on various models, sketch assignments, and market surveys.

One Major And the rest minor tasks are to be set from the entire syllabus

Assignments: Site Studies – Plot, site, land and regions, size and shape of the site, Analysis of accessibility, Topography, Climate, landforms, Surface Drainage, Soil, Water, Vegetation, Ecology, and Visual aspects.

Note: Evaluation is to be done through viva voce by an external examiner appointed by the university at the Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice

ARCH 319.1:Ergonomics

Ergonomics Introduction to human function human being in the man-made world and the importance of ergonomics, gross human anatomy, ergonomics for children - at workplace old people Ergonomics and design, disability, ageing and inclusive design, environmental



ARCH 319: Elective – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50% OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30% OR 20%)	End Sem University Exam (50% OR 10%)	Teachers Assessment* (50% OR 10%)					
SEC	SU	THEORY /STUDIO	ARCH 319	ELECTIVE- III (POOL II)				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective: To expose the students to the requirements of designing for human comfort by anthropometry. The students will know about ergonomics and its applications in design including designing for the physically challenged and the elderly.

Course Content Introduction to human function human being in the man-made world and the importance of ergonomics, gross human anatomy, ergonomics for children - at workplace old people Ergonomics and design, disability, ageing and inclusive design, environmental ergonomics, health effects of environmental stressors Ergonomics and Design Introduction to Anthropometrics, static and dynamic anthropometrics, Muscles and work physiology, Static and Dynamic work including maximum capacity. Disability, Ageing and Inclusive Design Built environment for the physically handicapped, Ramp, toilets and corridor design, Spatial Requirements for wheelchair movement-Design issues in the design of old age homes, Criteria to be considered when designing for the visually impaired. Environmental Ergonomics Biomechanics, Environmental Conditions including, thermal, illumination, noise and vibration, Bio transducers and nervous system including their limitations Health Effects of Environmental Stressors Controls and Displays, psycho psychological aspects of Design, Occupational hazards in the work environment, Visual stress, Postural Stress, and Stress due to commuting.

Suggested Readings Chaira, J. D. and Callender, J. H. (1987). Time Savers Standards for Building Types. Singapore: McGraw-Hill. Crosbie, M. J. and Watson, D. (2005). Time Savers Standards for Architectural Design: Technical Data for Professional Practice. 8th Ed. The McGraw-Hill Company

ARCH 319.2: Advanced Computing Techniques In Design

Advanced Computing Techniques In Design At the end of the course, students will be able to • Understand the domain & scope of Computer-Aided Design • Applications of digital fabrication in architecture design • Generate digital models of buildings & convert them to actual physical models • Explore the software to design parametric forms and evaluate and analyze the form on various parameters. • Generate physical models of the designed form using a digital fabrication process Introduction Overview of advanced computer application Application of CAD software in design development Domain & scope of Computer-Aided Design, Design Scripts - Python, grasshopper, rhino etc. Digital model to physical model Digital Fabrication, 3d printing, laser-cut, assembling of pieces etc.



Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50% OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30% OR 20%)	End Sem University Exam (50% OR 10%)	Teachers Assessment* (50% OR 10%)					
SEC	SU	THEORY /STUDIO	ARCH 319	ELECTIVE- III (POOL II)				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

The course shares an In-depth understanding of 3D modelling through digital software to enable the student to make effective audiovisual presentations, create three-dimensional models and visualization of interiors. The intent is to possess intermediate to advanced skills with improvement in the speed and quality of modelling.

Course Content

Creating solid models and surfaces using 3d modelling software such as 3dsmax, Revit, Rhino etc. Developing Interior Views and simple designs, applying materials and creating rendered images through rendering software such as Lumion, VRay etc. Introduction to Animation.

Application of CAD software in design development Exploring grasshopper as a tool to generate parametric forms and evaluate them using environmental analysis plugins. Plugins to be explored: Octopus Kangaroo Parakeet Weaverbird Pufferfish Anemone Ladybug Rabbit CFD analysis Rhino Vault 22.5 hours 2 Physical models using digital fabrication Constructing a physical model of the parametric design form using digital fabrication process of Laser cutting, 3d printing or CNC cutting

Suggested Readings

Braumann, J., Brell-Cokcan, S., Willette, A., McGee, W., & León, M. P. (2014). Robotic fabrication in architecture, art and design 2014. Berlin: Springer.

Adriaenssens, S. (2016). Advances in architectural geometry 2016. Zürich: Vdf Hochschulverlag AG an der ETH Zürich.

Beorkrem, C. (2013). Material strategies in digital fabrication. New York: Routledge, Taylor & Francis Group.

Gramazio, F., Kohler, M., Picon, A., Roche, F., & Verebes, T. (2014). Made by robots: challenging architecture at a larger scale. London: John Wiley & Sons.

Gramazio, F., & Kohler, M. (2014). Fabricate: Negotiating Design and Making. Zürich: Gta Verlag / Eth Zürich.

Naboni, R., & Paoletti, I. (2015). Advanced customization in architectural design and construction. Cham: Springer.

Pell, B. (2010). The articulate surface: ornament and technology in contemporary architecture. Basel: Birkhäuser

Oscar Riera Ojed, Lucast Guerre, Hyper-realistic Computer Generated Architectural Renderings. Giuliano Zampi Conway Lloyd Morgan, Virtual Architecture. Aidan Chopra, Rebecca Huehls, SketchUp For Dummies Bonnie Roskes, Modeling with SketchUp for Interior Design Daniel Tal, Rendering in SketchUp Inside Rhinoceros 5 Ron K.C. Cheng

Braumann, J., Brell-Cokcan, S., Willette, A., McGee, W., & León, M. P. (2014).



ARCH 319: Elective – III

Course Core	Course Area	Course Typology	Course Code	Course Name	EXAMINATION SCHEME					TOTAL MARKS	TEACHING SCHEME/WEEK			CREDITS
					THEORY			STUDIO			L	T	S	
					End Sem University Exam (50%OR 40%)	Two Term Exam (20%)	Teachers Assessment* (30%OR 20%)	End Sem University Exam (50%OR 10%)	Teachers Assessment* (50%OR 10%)					
SEC	SU	THEORY /STUDIO	ARCH 319	ELECTIVE- III (POOL II)				50	50	100			2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; S – Studio; C - Credit;

Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Robotic fabrication in architecture, art and design 2014. Berlin: Springer.

Adriaenssens, S. (2016). Advances in architectural geometry 2016. Zürich: Vdf Hochschulverlag AG an der ETH Zürich.

Beorkrem, C. (2013). Material strategies in digital fabrication. New York: Routledge, Taylor & Francis Group.

Gramazio, F., Kohler, M., Picon, A., Roche, F., & Verebes, T. (2014). Made by robots: challenging architecture at a larger scale. London: John Wiley & Sons.

Gramazio, F., & Kohler, M. (2014). Fabricate: Negotiating Design and Making. Zürich: Gta Verlag / Eth Zürich.

Naboni, R., & Paoletti, I. (2015). Advanced customization in architectural design and construction. Cham: Springer.

Pell, B. (2010). The articulate surface: ornament and technology in contemporary architecture. Basel: Birkhäuser.

ARCH 319.3: Architecture and human behavior

Architecture and human behaviour

Introduction: Classification; History & evolution; Types, Scales, locations, significance & impact- Socio-Cultural & Economic, urban infrastructure, civic amenities, Health impact, Psychological impact, Ownership, management. Scope for Architectural & Inter-professional services. Standards: Design criteria: Technical systems: Case Studies: Exploration & analysis of different industrial environments; Study of plant systems, spatial organizations, design interventions, technical provisions, relevance, impacts - physical, administrative, socio-cultural, sustainable; future forecasts & trends.

ARCH 319.4. MOOC

Course Educational Objectives (CEOs): overall nurturing of the student with issues in practice and field outside
Course Overview:

The following is a representative list of what may :

Tutorials/ additional classes for any course on online mode of platforms, Provides knowledge to support student being sensitive to design; a paper presentation

Course Contents:

Unit	Syllabus: Topic	Subtopic	Teaching Hours:
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The creative MOOC provide an opportunity to access a different form of architecture related to imagination, visualization & creation. They offer the experience of unique ingenuity, theory or workmanship. The essence of the creative domain can be achieved by exploring different materials, techniques, and processes; developing creative products/theories; finishing & presenting the product for the concepts evolved. The outcome will be through portfolio & presentations. Where these workshops or MOOCs help them explore the different topics relevant to individual interests and in the palette of choices for the semester