

Shri Vaishnav institute of Architecture

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

B. ARCH (2021-26)

COURSE CONTENT

ARCH 501: ARCHITECTURAL DESIGN - IV

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L - THEORY; S-STUDIO, T-TUTORIAL; C - CREDIT; HRS: HOURS; MIST - MIDTERM TEST, A MIST - AVERAGE OF MIDTERM, ESUE - END SEMESTER UNIVERSITY EXAMINATION; IA - INTERNAL ASSESSMENT PROGRESSIVE, SS-FOLIO FINAL Sessional INTERNAL), EV - EXTERNAL VIVA VOICE, RVW- INTERMEDIATE REVIEW

3RDYEAR / V Semester

ARCH 501: ARCHITECTURAL DESIGN – IV

Syllabus: 15 weeks (9 hours/week) Total Teaching hours: 135 Hr

COURSE OBJECTIVE:

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

COURSE OUTCOME:

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

- Students will learn and develop design vocabulary which would define the institutional character through its organization principles,
- Students will understand construction techniques and materials.
- · Student will achieve the capacity of Site analysis, Landscape systems, Abstract Models, Part detail constructional models, and design development methods that clarify part-whole relationships. EXPECTED SKILLS / KNOWLEDGE the TRANSFERRED:

To enhance the understanding of the complexities of architectural design for residential needs and develop creative design solutions for good living environments. Use of standards, handling of space, and application of knowledge gained from other subjects in design.

FOCUS: Institutional & Building Systems, Services.

COURSE OVERVIEW:

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

COURSE CONTENTS:

1

2

SR. NO. **SYLLABUS: TOPIC SUBTOPIC TEACHING HOURS:**

DESIGN

Institutional scale

17 hrs • The institutional theme, image, concept

- Organization and disposition of spaces
- The character of the institutional building
- The density of user groups and circulation patterns
- The studio also emphasizes the resolution of appropriate systems, such as spatial, structural and building along with programmed and un-programmed spaces

Theme & focus of design: Study, analysis & utilization of 15 hrs Non-Conventional Systems (alternative building Understanding, technologies). exploration

development of design programme, concepts & detailed design with a focus on Stabilized Mud Blocks, Bamboo, Ferro-cement, etc. in urban &/or rural contexts.

Basic Components: Behavioral Science; 32hrs Functionality; Building Materials; Theory of Design; Form Development; Tectonic decisions:

Controller of Examination Chairperson

Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore

Joint Registrar Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore

Chairperson **Board of Studies** Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore

Faculty of Studies Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore



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COURSE CONTENT

35hrs

35 hrs

ARCH 501: ARCHITECTURAL DESIGN - IV

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Structures, Building Materials, Services; Site Planning; Building Control Regulations; Inclusive Design; Design Communication.

& Understanding the essence; detailing process; User analysis; Elements; functionality, aesthetics; Materials. This Minor Exercise will be represented through conceptual development (sketches, physical & digital models).

Design Analysis: Exploration & analysis of iconic Ecosensitive Architecture; Understanding design philosophy & process; Learning from design quality, Literature/book reviews; Architectural critiques.

Design Exercise: Building Design. The complexity of design: Site planning involving multiple buildings; Detailing of anyone building with alternative technology. Typology: Co-operative Societies, Vocational Training Centers, Rural Residential Schools, Bus Stations, Veterinary Centers, Temporary Shelters, Labour Camps, Ayurveda Centers, Naturopathy Centers, SOS Villages, Horticultural Centers, Ashrams etc. Site extent: Flat site up to 8000 m2.

GUIDELINES

3

4

5

One Major And Minor task/ exercises are 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

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.
- At least one major exercise and one minor design with two-time problems should be given.
- The final submission shall necessarily include a model for at least one of the two main problems.
- In the end, in an exam which is a viva-voce, the students have to present the entire semester's work
- Evaluation is to be done through viva voce by an external examiner appointed by the university at Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice. **SUGGESTED READINGS**:

Bousmaha Baiche & Nicholas Walliman, Neufert Architect's data, Blackwell Science Ltd.

Buildina Code - ISI

Chiara Joseph de and Others. Time Savers Standards of Building Types. McGraw – Hill, 1990.

Ching, Francis D.K. Architecture: Form, Space, and Order, 2nd Ed. Van Nostrand Reinhold, New York, 1996.

Criss B. Mills, Designing with models: A Studio Guide to making & using architectural models, Thomson & Wadsworth, USA,2000. **DeChiara and Callender,** Time-saver standards for building types, Mc Graw Hill Company

Hand Book of Planning and Design Data.

Hanks, A. David. Decorative Designs of Frank Lloyd Wright, Dover Publications, Inc. New York, 1999.

Hepler, E. Donald, Wallach, I. Paul. Architecture Drafting and Design, 3rd Ed. McGraw-Hill Book Company, New York, 1977.

Itten, Johannes. Design and Form: The basic course at the Bauhaus, Thames and Hudson Ltd., London 1997.

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

Konya, Allan. Libraries: A Briefing and Design Guide. The Architectural Press, London, 1986.

Krier, Rob. Architectural Composition, Academy Editions, London, 1988.

Maier Manfired Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY. (1977)

Chairperson

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Meiss, Pierre Von. Elements of Architecture: From Form to place, E and FN Spon, London, 1992.

Mike w.Lin, Drawing & Designing with confidence - A step by step guide, John Wiley & Sons, USA,1998.

National Building Code - ISI

Neufert, Ernst. Ernst Neufert Architects Data, Granada Pub. Ltd., London, 2000.

Patricia Tutt and David Adler, New Metric Handbook -- The Architectural Press

Peloquin, Albert. Barrier-Free Residential Design. McGraw-Hill, Inc., New York, 1994.

Pevsner, Nikolaus. A History of Building Types. Thames and Hudson, London,1976. **Ramsey / Sleeper**, National Architectural graphic standards, The American Institute of Architects

Rosenfield, Isadore. Hospital Architecture and Beyond. Van Nostrand Reinhold, New York, 1969.

Sam F Miller, Design process- Van Nostrand Reinhold

Shah, S. Charanjit. Architects Hand Book Ready Reckoner. Galogotia Pub., New Delhi, 1996.

Smithies, K.W. Principles of Design in Architecture. Chapman and Hall, 1983.

Stone, G. Louis. Institutional Buildings Architecture of Controlled Environment.

Tergsone, W.R. Practical Laboratory Planning.

Time-saver standards for building types,

Untermann, Richard and Small, Robert. Site Planning for Cluster Housing.

Wild, Friedemann, Libraries for Schools and Universities. Van Nostrand Reinhold, New York, 1972.

Wucius, Wong. Principles of Two-Dimensional Design. Van Nostrand Reinhold 1972.



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B. ARCH (2021-26)

COURSE CONTENT

ARCH 502: LANDSCAPE DESIGN & SITE PLANNING

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ARCH 502: LANDSCAPE DESIGN & SITE PLANNING

Syllabus: 15 weeks (3 hours/week) Total Teaching hours: 45 Hrs.

COURSE OBJECTIVE:

To expose the students to the various techniques of site analysis and planning,

To teach the importance of the site and its content in architectural creations, to orient the students towards several influencing factors which govern the sitting of building or group of buildings in a given site to introduce various techniques of site analysis through exercises and case studies, the methodology of preparing a site analysis diagram, which serves as a prelude to any architectural creation through exercises

Understanding the environment, human interventions and their impacts on it and knowledge about various measures of protecting it. Exposure to various concepts, ideas and techniques prevalent in landscape architecture.

To expose the students to the various techniques of site analysis and planning,

COURSE OUTCOME:

- At the end of the course, students will be able to -
- This course introduces students to site planning and relates it to the design and planning of built environments.
- This course introduces students to landscape design and relates it to the design and planning of built environments. It provides an overview of the development of landscape design, site studies, plant studies and the application of the knowledge at various levels of design. To expose the students to the various techniques of site analysis and planning,
- To teach the importance of the site and its content in architectural creations, to orient the students towards several influencing factors which govern the sitting of building or group of buildings in a given site
- to introduce various techniques of site analysis through exercises and case studies, the methodology of preparing a site analysis diagram, which serves as a prelude to any architectural creation through exercises
- Understanding the environment, human interventions and their impacts on it and knowledge about various measures of protecting it. Exposure to various concepts, ideas and techniques prevalent in landscape architecture.
- To expose the students to the various techniques of site analysis and planning,

EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

- The contextual importance of on-site analysis can be understood based on the various site factor concerning the study area.
- A first-hand understanding of site drawings for Landscape Architecture and Urban design is studied.
- Various scientific and analytic site analysis techniques are understood.
- A methodological approach for the preparation of master plans for small-scale and large-scale projects can be understood.
- To develop an understanding of the importance of site conditions for the creation of good architectural solutions and focus on the site as a fundamental component of building design. examines the interrelationship of intended site use with the environment and also topography, vegetation and landscape, climate, geography, as well as theoretical aspects of site development. conceptual understanding of landscape design and site planning principles. skills in integrating landscape design with built environments

COURSE OVERVIEW:

• This course introduces students to site planning and relates it to the design and planning of built



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COURSE CONTENT

ARCH 502: LANDSCAPE DESIGN & SITE PLANNING

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environments, it introduces students to landscape design and relates it to the design and planning of built environments. It provides an overview of the development of landscape design, site studies, plant studies and the application of the knowledge at various levels of design.

COURSE CONTENTS:

SR. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING
			HOURS:
1	SITE PLANNING	Philosophical and design issues related to site development – sitting of buildings, spatial and contextual relationships of built and outdoor space and circulation, site and its relationship to surroundings. Importance of climate and social factors in the development of the site.	11 hrs
2		The process of design development. Identifying the functional requirements of the site. Development of site by mutual exploitation of forms and use of grading principles. • Introduction to Site Planning:	11 hrs
3		 site drawings Introduction To Site Analysis site context Design Of Landforms In A Site: Site Planning Principles And Techniques: Site survey and appraisal 	11 hrs
4	LANDSCAPE DESIGN	 Contemporary concepts and concerns: Introduction to Landscape Architecture: History of Landscape Architecture: Elements in Landscape Design: Hardscape & Softscapes: Plants and Design: Landscape Services & Sustainability Urban Landscape: 	6 hrs
5		 Contemporary concepts and concerns Environmental impact assessment: methodologies and techniques, the Environmental legislation: planning techniques: evaluation techniques: 	6 hrs

GUIDELINES

One Major And Minor task/ exercises are to be set from the entire syllabus

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NOTE:

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 covered as design problems will have to be covered by the Studio faculty members through
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- At least one major exercise and one minor design with two-time problems should be given.
- The final submission shall necessarily include a model for at least one of the two main problems.
- In the end, in an exam which is a viva-voce, the students have to present the entire semester's work for assessment.
- Evaluation is to be done through viva voce by an external examiner appointed by the university at Institute. Portfolios, after the university exam, shall be retained at the Institute level for the viva-voice.

Chairperson

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ASSIGNMENTS

Simple exercises in using plants and landscape elements, Studio exercises emphasizing the relationship between built form and outdoor areas, and site planning issues. Landscape design of a neighbourhood open space (area of 2000 to 3000 sq. metres)

SUGGESTED READINGS:

B.C.Punmia, Ashok. k.Jain, Arun. K.Jain, Surveying Vol I, Firewall Media, 2005

Blake, Alan. Landscape Construction and Detailing. B.T. Batsford Ltd., London, 1996.

Brian Hacket, Planting Design

Bring, M, "Japanese Gardens: "design & Meaning

Colvin, Brenda. Land and Landscape.

Diane Y. Carstens, "Site Planning & Design for the Elderly", Van Nostrand Reinhold, New York, 1993

Edward.TQ, Site Analysis, Architectural Media,1983

Geoffrey And Susan Jellicoe, The Landscape of Man, Thames And Hudson, 1987

Grant W Reid, From Concept to Form in Landscape Design, Van Nostrand Reinhold Company, 1993

Hacheat, Brian. Planting Design.

Harris, C.W. and Dines, T. Nicholas. T.S.S for Landscape Architecture. McGraw Hill, New York, 1995.

James B. Root, "Fundamentals of Landscaping & Site Planning", AVI Pub. Co., Westport, 1985

John I.Mutloch. Introduction to Landscape Design, 2nd Ed.John Wiley &Sons, Inc, New York, 2001

John Ormsbee Simonds, "Landscape Architecture: A manual of site planning & design", McGraw Hill, 1961.

Joseph De Chiarra and Lee Coppleman, "Planning Design Criteria", Van Nostrand Reinhold Co., New York, 1968

Laurie, Michael. An Introduction to Landscape, 2nd Ed. Prentice-Hall, New Jersey, 1986.

Lynch, Kevin. Site Planning. MIT Press, Massachusetts, 1962.

R. Gene Brooks, "Site Planning - Environment, Process and Development", Prentice-Hall, 1988

Richard Untermann and Robert Small, "Site planning for cluster housing", Van Nostrand Reinhold Company, 1977

Santapau. H. Common Trees. National Book Trust, New Delhi, 1981.

Simonds, J.O., "Earthscape: A Manual of Environmental planning", McGraw Hill Book Co., New York, 1978.

T.K. Bose and Chowdhury, Tropical Garden Plants in Colour, Horticulture And Allied Publishers, Calcutta, 1991

Thomas H. Russ, "Site Planning and Design Handbook" Pearson Education, 2002

 $\textbf{Time Savers Standards} \ \text{for Site Planning, McGraw Hill, Inc, } \ 1995$

Trivedi, P. Pratibha. Beautiful Shrubs. Indian Council of Agricultural Research, New Delhi, 1990.

TSS for Landscape Architecture, McGraw Hill, Inc, 1995

William M. Marsh, "Environmental Analysis for Land Use and Site Planning", McGraw-Hill, 1978



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B. ARCH (2021-26)

COURSE CONTENT

ARCH 503: BUILDING MATERIAL AND CONSTRUCTION -V

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ARCH 503: BUILDING MATERIAL AND CONSTRUCTION -V

Syllabus: 15 weeks (3 hours/week) Total Teaching hours: 45 Hrs.

COURSE OBJECTIVE:

To introduce and expose students to various aspects involving the use of steel for the construction activity of buildings and structures.

COURSE OUTCOME:

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

- 1. Summarize the building material steel and various construction techniques concerning classification, and composition.
- 2. Identify the chemical, and physical properties leading to structural strength and aesthetic qualities.
- 3. Analyze the constructional systems and detailing of metal building components.
- 4. Demonstrate the construction practices and details about the curtain wall.
- 5. Determine the appropriate structural system and conceptual design of long-span structures. **EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:**

To understand the techniques of constructing Steel and Pre-Fab, staircases and partitions using different materials

FOCUS: STEEL

- The student will understand the long-span building construction system
- Students will develop an understanding of different types of Finishes
- The student will learn the relationship between construction techniques and architecture vocabulary.

COURSE OVERVIEW:

The coursework deals with principles, methods and construction practices of structural steelwork. The outcome of this course is the ability to SPECIFY building materials as per the demands of the Design Program.

COURSE CONTENTS:

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SR. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING G HOURS:
		Long span structures - flat slab, beam and ribbed slab, waffle slab, vault, dome, shell structure, steel trusses, girder, portal frame, folded plate structure, PEB STEEL Introduction:	
1		Steel Work Connections: Metal Building components: windows, doors, stairs, collapsible gates, rolling shutters, railings, BIS Codes.	6hrs
		Steel Members: Columns and stanchions, stanchions or column bases, beam and girders, column and beam connections plate girders, lattice or Warren girder.	
2		Frame & Roof systems: Steel stanchions, girders, trusses: Characteristics, Types, components, selection, applications, structural sizing, fabrication & erection.	14hrs
3		Castellated Beam, Portal frames, Steel connections. Analysis & Design of simple trusses. Steel Roof Trusses: Steel trusses, types for various spans, tubular steel roofs, monitor roof, north light roof truss, details	10hrs

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ARCH 503: BUILDING MATERIAL AND CONSTRUCTION -V

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of steel-roof trusses.

4 wall: Characteristics, Types, components, 10hrs

> selection, applications, structural sizing, connections. Lantern light, dome light, structural steel practice and drawings as per IS Code. Portal frame, Geodesic principles,

cable net and tensile structures.

5 Advanced Systems: Space frames; Pre-engineered 5hrs

buildings, fire protection. Overview: tall structures,

· Different types of Interior, Exterior, and Vertical & Horizontal Finish i.e.Plaster, Paint, Texture, Paving, Cladding

etc.

NOTE: This is a studio subject and students should be made to prepare construction drawings as studio exercises along with the theoretical inputs. The studio works in large-span structures, should be supplemented with appropriate site visits.

SUGGESTED READINGS:

MORGAN, Elements of Structures

SALVADORI. Structures in Architecture.

A.Agarwal -Mud: The potentials of earth-based material for third world housing - IIED, London 1981.

Barry, R. The Construction of Buildings Vol. 2, 5th Ed. East-West Press. New Delhi, 1999.

Bindra, S. P. and Arora, S. P. Building Construction: Planning Techniques and methods of Construction, 19th ed. Dhanpat Rai Pub. New Delhi, 2000.

Dr B.C.Punmia – Building Construction

Francies D.K.Ching – Building Construction Illustrated. VNR, 1975.

Hailey and Hancock, D.W. Brick Work and Associated Studies Vol. 2. MacMillan, London, 1979.

HUDCO - All you wanted to know about soil stabilized mud blocks, New Delhi, 1989.

McKay J.K. Building Construction Metric Vol. 4, 4th Ed. Orient Longman Pvt. Ltd., Mumbai, 2002.

Mitchell. Advanced Structures.

Moxley, R. Mitchell's Elementary Building Construction, Technical Press Ltd.

R.Chudley - Building Construction Handbook - BLPD, London 1990.

R.Chudley, Construction Technology.

Rangwala, S.C. Building Construction, 22nd ed. Charotar Pub. House, Anand,2004.

Rangwala, S.C. Engineering Materials: Material Science, 31st Ed. Charotar Pub. House, Anand, 2004.

Sushil Kumar. T.B. of Building Construction, 19th ed. Standard Pub, Delhi, 2003.

Use of Bamboo and a Reed in Construction - UNO Publications

W.B. Mackay - Building Construction Vol 1,2 and 3 - Longmans, UK 1981.

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

B. ARCH (2021-26)

COURSE CONTENT

ARCH 505: HISTORY OF ARCHITECTURE & CULTURE - V

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ARCH 505: HISTORY OF ARCHITECTURE & CULTURE – V

Syllabus: 15 weeks (2 hours/week) Total Teaching hours: 30 Hrs.

COURSE OBJECTIVE:

To expose the students to a wide spectrum of architectural styles ranging from pre-historic to modern times.

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 OUTCOME:

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

- The student will learn about the post-Enlightenment worldview, the machine age and industrialization, mass culture
- Students will learn the evolution of a new language from the new conditions
- Students will learn about the new concepts of space and form parallels in the Arts and Sciences
- The student will learn about the beginning and the causes of the Modern and subsequent movements
- The student will learn about the context through which ideas developed as a linear consequence of
- The student will become aware of the theories developed in the latter part of the 20th century EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:
- 1) Acquire knowledge to identify the common characteristics among the monuments of a particular style.
- 2) Acquire graphic skills to present a building, analyze its elements and explain the composition.
- 3) Acquire knowledge of good practices of architecture in the past.

FOCUS: Colonial & Early industrial Theories, Modern, Post Modern & Contemporary Architecture

COURSE OVERVIEW:

History of Architecture to be studied as the development of building forms in response to social, religious, aesthetic and environmental factors. The study should focus on the three-dimensional forms, plan forms, façade organization, structural solution, construction methods and ornamentation. The study should focus on the general trends and not on specific e.g., on buildings.

COURSE CONTENTS:

SR. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING HOURS:
1		 European colonial expansion and colonial development in India 	6 hrs
		• Imposition, modification and assimilation. New modes of organization, new materials and techniques, and new building types.	
		• The industrial revolution: new materials, techniques new modes of production. The industrial city and reform movements.	
2		• The transformation of the building process and impacts on architecture. Abstraction, standardization, mass production.	6hrs

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B. ARCH (2021-26)

COURSE CONTENT

ARCH 505: HISTORY OF ARCHITECTURE & CULTURE - V

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• To study the evolution of form and growth of architectural vocabulary from Neo-Classical to Contemporary architecture.

6hrs

6hrs

- Artistic Movements like Bauhaus, De Stijl, Art Nouveau, CIAM etc. Modernism in Europe & the U.S. (Louis Sullivan, Frank Lloyd Wright, Mies Van Der Rohe, Le Corbusier etc.). Works of architects like Alvar Aalto, Eero Saarinen, Louis Kahn, Robert Venturi
- Post-Modernism Philip Johnson, Charles Moore, Michael Graves, Richard Meier, James Stirling and others. De-constructivism and Post-Structuralism Influence of the Industrial Revolution on building materials, Construction Technology, the evolution of new building types and increasing user requirements. Characteristic styles of modern architecture up to the First World War. Steel structures, Arts and crafts movement, Art Nouveau, Vienna School, Chicago School, Monumentalism, Expressionism and the beginning of RCC. Theories of John Ruskin, William Morris, Henry Vande Velde, Otto Wagner, Peter Behrens and Louis Sullivan.

Contributions to Architecture and Theory were made by pioneers Le Corbusier, Frank Lloyd Wright, Walter Gropius, and Mies Van der Rohe during the periods between the Worlds Wars.

Characteristics of modern architecture after the Second World War. Study of Alvar Aalto, Ero Saarinen, Richard Neutra, Louis I Kahn, Phillip Johnson, etc.

Design theories and contributions of Engineersarchitects like Pier Luigi Nervi, Felix Candela, Buckminster Fuller, and Frei Otto.

Pre-independence architecture in India: Development of secular architecture from the end of the 18th Century to the middle of the 20th Century.

NOTE:-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

SUGGESTED READINGS:

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

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

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

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

History of World Architecture. London: Faber, 1979.

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

Bagenal, Philip. The Illustrated Atlas of the World's Great Buildings: A History of World Architecture. S.1.: Leisure, 1980.

Fazio, Michael W., Marian Moffett, Lawrence Wodehouse, and Marian Moffett. A World History of Architecture. Boston: McGraw-Hill, 2009

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COURSE CONTENT

ARCH 505: HISTORY OF ARCHITECTURE & CULTURE - V

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Peter Scriver (Editor), Vikramaditya Prakash (Editor) Colonial Modernities: Building, Dwelling and Architecture in British India and Ceylon (Architect). Routledge; New Ed edition (April 21, 2007)

Nilsson, Sten (1968). European Architecture in India 1750 - 1850. London: Faber and Faber

Thapar, Bindia (2004). Introduction to Indian Architecture. Singapore: Periplus Editions.

Building Construction: The history of building construction » The second industrial age", Encyclopedia Britannica. Accessed June

Mignot, Claude. The architecture of the 19th Century. Köln: Evergreen (Benedikt Taschen), 1994. .

Pevsner, Nikolaus. A History of Building Types. Princeton, NJ: Princeton UP, 1976.

Hofmann, Werner, and Udo Kultermann. Modern Architecture in Color. New York: Viking, 1970. .

Michell, George; The Penguin guide to the monuments of India, 2 vols, 1989

Porter, Andrew (1998). The Nineteenth Century, The Oxford History of the British Empire Volume III.Oxford University Press.

Marshall, PJ (1996). The Cambridge Illustrated History of the British Empire. Cambridge University Press

Olson, James (1996). Historical Dictionary of the British Empire. Greenwood Publishing Group.

McGowan, F.; Radosevic, S.; and Tunzelmann, N. von. Emerging Industrial Architecture in Europe. Hoboken: Taylor and Francis, 2004

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COURSE CONTENT

ARCH 506: AGRITECTURE

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ARCH 506: AGRITECTURE

Syllabus: 15 weeks (2 hours/week) Total Teaching hours: 30 Hrs.

COURSE OBJECTIVE:

The course aims to introduce the culture and knowledge systems of indigenous people

COURSE OUTCOME:

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

- Explain how conventional agricultural methods contribute to climate change.
- Define terms such as urban agriculture, controlled environment agriculture (CEA), and vertical agriculture.
- Describe technologies relevant to CEA, such as hydroponics, aeroponics, and aquaponics.
- Discuss how CEA can enhance food security and bring social value to underserved communities

 Output

 Description:

 Output

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EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

- conventional agricultural methods contribute to climate change. urban agriculture, controlled environment agriculture (CEA), and vertical agriculture.
- Describe technologies relevant to CEA, such as hydroponics, aeroponics, and aquaponics.

COURSE OVERVIEW:

Seeds of Change: Architects and landscape architects are helping create new growth strategies to combat climate change, protect fragile ecosystems, and feed burgeoning populations. The course deals with various methods of farming and architecture related to farming

COURSE CONTENTS:

SR.

. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING G HOURS:
1	introduction	 What are agritecture (agro green), Urban Farming and agro-urban architecture difference between traditional and new modes of farming Historical account and current implementation with local to global implications 	6 hrs
2	History and its influence	 Agrarian society and its impact on architecture Crop pattern, domestic animals, equipment and its relation to various living and storage spaces; Agricultural practices and waste contributing to materials & techniques. Living style, beliefs, festivals and Spaces Space-Activity relationship; living style and beliefs reflected on space usage and design. Conscious efforts for environmental design; Indian Festivals and built habitats. 	4hrs
3	Environmental and global perspective	 Global Issues in the farm sector Environmental food crisis Scalable solutions, micro scale personal, small- and large-scale community, commercial New ways of community food production Benefits of greening with green community spaces 	6hrs
4	Indian perspective	 Indian Artisans and contribution to spaces Artisans as integrating the thread of civilization. Product, 	4hrs

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B. ARCH (2021-26)

COURSE CONTENT

ARCH 506: AGRITECTURE

4hrs

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utilitarian concept, design, Trade and business; Spaces as a reflection of artisan's skills using local material

Building materials and Technology with region-based, Vernacular Use of Local materials leading to the climate-responsive design, regional character reflecting organic development, and Vernacular thought leading to sustainable habitat. Ease of modification, extension, and intervention due to people-based technology.

5 settlement design and other issues

- Water, its judicial use and management Water as location criterion, rivers in Indian traditions; the phenomenon of Monsoon, Techniques of making reservoirs, social contribution to Scarcity, pollution and management of water.
- Water, its judicial use and management Water as location criterion, rivers in Indian traditions; the phenomenon of Monsoon, Techniques of making reservoirs, social contribution to Scarcity, pollution and management of water.
- Settlement design and issues Settlement types and their guiding principles restoring social, economic & environmental resilience; Scale and location of various structures, Issues and limitations in design, Historical references in scripts and LOKVIDYA

GUIDELINES

Sessional work: The assignment will be in the form of a journal or small project showing the application of the methods

SUGGESTED READINGS:

Wagner Walter, Green Architecture, Design for a sustainable future Energy-efficient buildings

Hawkes Dean and Foster Wayne, Architecture, Engineering and Environment

 $\textbf{Koenigsberg}, \, \textbf{Manual of Tropical Housing and Climate}$

Milli Mujumdar, Energy Efficient Buildings in India Houben Hugo Publications from - CBRI - Roorkee, Earth Construction

Sarao, Gaabi and Singh, Refrigeration and Airconditioning

Rangwala, Water supply and Sanitary Engineering (Environmental Engineering)

F Hall, Plumbing Services and Design Guide –Compiled and published by Institute of Plumbing Building Services and Equipment (Part I & Part II) **Frank R Dagostino** Mechanical and Electrical Systems in Construction and Architecture-by

 $\textbf{Lynn S Beedle} (\textbf{Council of tall buildings and urban habitat)} \ \textbf{Advances in Tall Buildings}$

Lechor Worbert Heating, Cooling and lighting design methods for architecture. By

M. K. Gandhi, Gram Swaraj by Navjeevan Trust publication, Ahmedabad

Rashtrasant Tukdoji Maharaj, Govt. of Maharashtra publication. of Center of Sciences for Villages, Gram Geeta

Dharamitra, Dattapur, Wardha. Tribes of Central India, Publications of Vriksha Mitra, Chandrapur, M. S.

Ar. Anil Laul, New Delhi. Green is Red, https://www.agritecture.com/researcharticles,https://www.intechopen.com/books/advances-in-landscape-architecture/urban-agriculture-the-allotment-gardens-asstructures-of-urban-sustainability,https://mithun.com/project/center-for-urban-agriculture/

https://www.detail-online.com/article/agro-urban-architecture-34394/,https://www.designboom.com/tag/urban-farming/,Urban Growth: A Synthesis of Agriculture and Architecture by Ashley

Marcynuk, https://continuingeducation.bnpmedia.com/courses/architectural-,ecord/urban-,griculture/3/,https://www.archdaily.com/tag/urban-farming,https://futurearchitectureplatform.org/projects/2b2c35a3-091c-46d9-b6e7-a494f49e0f97/

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B. ARCH (2021-26)

COURSE CONTENT

ARCH 507: STRUCTURAL DESIGN - II

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ARCH 507: STRUCTURAL DESIGN - II

Syllabus: 15 weeks (2 hours/week) Total Teaching hours: 30 Hrs.

COURSE OBJECTIVE:

• To develop the structural design skills of the student in steel.

COURSE OUTCOME:

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

- Discusses loads on structures, stresses, the concept of factor of safety, methods of design and gives an introduction of a type of rolled steel sections.
- Design of simple connections, rivets, welds, bolts and pins.
- Design of welded connections. Cognitive Creating Design of compression members.
- Design of column base and footing.
- Design of Tension members Cognitive Creating Design beams and Gantry Girders

EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

• Develop the capability to design Steel structures.

COURSE OVERVIEW:

• The course focus is on the Structural Design of elements of Industrial Buildings in Steel.

COURSE CONTENTS:

SR. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING HOURS:
1		Design of simple beams including a check for shear and deflection for laterally supported and unsupported conditions, analysis of simple beams from strength and stiffness	5hrs
		considerations. Design of built-up beams with flange plates only, Introduction to plate girders (No Design calculations)	
2		Axially loaded tension members: introduction, net effective areas, analysis and design of tension members including rivet and welded connections, (L-Angle and T-section only)	5hrs
		Columns: Analysis and design of axially loaded steel columns using a single Section, 2 channels placed back to back and toe to toe, 4-angles etc., including a lacing system.	
3		Design of slab base and gusseted base for axial loads (without moments) for different columns. Design of grillage Foundation for isolated columns only	5hrs
4		Purlins: Introduction, Dead load, live load and wind loads, the design of angle purlin and I-section purlin	5 hrs
5		Bracket Connections, Riveted & Welded Connections design of Joints.	5hrs

NOTE:-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

SUGGESTED READINGS:

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Board of Studies	Faculty of Studies	Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth
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B. ARCH (2021-26)

COURSE CONTENT

ARCH 507: STRUCTURAL DESIGN - II

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Ram Chandra. Design of Steel Structures Vol. I, 10th Ed. Standard Book House, Delhi, 1999.

Dayaratnam, P. Design of Steel Structures. Wheeler Pub., Allahabad, 1992.

Ramamrutham, S. and Narayanan, R. Design of Steel Structures, 4th Ed. Dhanpat Rai and Sons, Delhi, 1995. IS CODE FOR STEEL



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B. ARCH (2021-26)

COURSE CONTENT

ARCH 508: BUILDING INFORMATION MODELLING

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ARCH 508: BUILDING INFORMATION MODELLING

Syllabus: 15 weeks (2 hours/week) Total Teaching hours: 30 Hrs.

COURSE OBJECTIVE:

• To develop the BIM skills of the student.

COURSE OUTCOME:

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

- Build digital 3d models and rendered images using any suitable 3d software.
- Develop simple animations.
- Make use of different commands and features to build a BIM model.
- Build basic parametric Revit Families for BIM Model.
- Build virtual walkthroughs and experience architectural designs in Virtual Reality.

EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

- Develop the capability to design with BIM.
- The student will be able to create the design in BIM software and generate working drawings
- The student will be able to handle multi-disciplinary coordination (Architecture, MEP, Structure, Landscape, etc.)
- The student will learn presentation skills

COURSE OVERVIEW:

- The course focus is on BIM. Demonstrate multi-disciplinary coordination (Architecture, MEP, Structure, Landscape, etc.)
- Apply the skills to improve the presentation of drawings
- Create the design in a BIM software and generate working drawings

COURSE CONTENTS:

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SR. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING G HOURS:
1		 An overview of BIM technology What is BIM? Introduction: History: BIM vs. Geometric Modeling Elements of BIM 	5hrs
2		 Application of BIM Software's Management of building information models BIM in construction management BIM in facility operation BIM in green building 	
3		 Creation and conversion of the design into BIM Software's Basic modelling Introduction to Building 	10hrs
		Information- Modelling – BIM and Revit- User interface – Levels- Grids & Columns – Walls – Doors – Windows – Floors – Stairs – Ceilings – Roofs – Sections - Elevations	
4		 Design development and documentation in 3 Dimension Extended modelling and outputs Curtain walling - 3d views - Rendered outputs - Schedules - Families (basic content creation) - Details & Callouts - Linked files - Layouts & Plotting 	10hrs

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B. ARCH (2021-26)

COURSE CONTENT

ARCH 508: BUILDING INFORMATION MODELLING

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Conceptual modelling Collaboration & Analysis
 Organic conceptual modelling - Linking to other
 modelling software - Collaboration - BIM Analysis

Understanding of basic parametric elements

5 hrs

NOTE:-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

SUGGESTED READINGS:

5

Brad Hardin, Dave McCool, BIM and Construction Management: Proven Tools, Methods, and Workflows

Briscoe, Danelle. (2015) Beyond BIM: Architecture Information Modeling. London Routledge Taylor and Francis Group.

Danelle Briscoe, Beyond Bim: Architecture Information Modeling

Dominik Holzer, The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering, and Construction **Eastman, Chuck. Teicholz, Paul. Sacks, Rafael. Liston, Kathleen (2011)** BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. John Wiley & Sons.

Finith E Jernigan Aia, Big Bim Little Bim

Garber, Richard. (2014). BIM Design: Realising the Creative Potential of Building Information Modelling. Wiley. 1 edition.

Kensek, Karen M. Noble, Douglas E. (2014). Building Information Modeling: BIM in Current and Future Practice. Wiley.

Prof. Bimal Kumar, A Practical Guide to Adopting BIM in Construction Projects

Ray Crotty The Impact of Building Information Modelling

Richard Garber, BIM Design: Realising the Creative Potential of Building Information Modelling

Robert Klaschka, BIM in Small Practices: Illustrated Case Studies

Stefan Mordue, Paul Swaddle, David Philp Building Information Modeling For Dummies

Steve Race, BIM Demystified



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COURSE CONTENT

ARCH 519: ELECTIVE - V

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ARCH 519: ELECTIVE – V

Syllabus: 15 weeks (2 hours/week) Total Teaching hours: 30 Hrs.

5 Sem		ELECTIVE V
	519.1	Alternative construction techniques
	519.2	Lightweight structures
	519.3	Graphics design
	519.4	MOOC

COURSE OBJECTIVES:

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

COURSE OUTCOME:

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

better grooming than just books and theories.

EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

better grooming than just books and theories.

COURSE OVERVIEW:

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

COURSE CONTENTS:

SR. NO.	SYLLABUS: TOPIC	SUBTOPIC
1		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; 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

GUIDELINES

The topic of the project is to be displayed on the Institute Notice Board fifteen days in advance of the commencement of the classes

NOTE: Evaluation is to be done through viva voce, Portfolios after the university exam shall be retained at the Institute level for the viva-voice

Alternative construction techniques

Students will learn about Furniture Design for designing with Ergonomics & aesthetics in context. The student will be able to

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TEACHING HOURS:





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COURSE CONTENT

ARCH 519: ELECTIVE - V

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Understand elements of furniture in Commercial (Retail) Interiors. Exploring the possibilities of designing furniture with optional Materials and processes.

Elements of Furniture including Shop Fronts, Lighting, Window Display & Signage. Surveying collecting data through a live case study and evaluation of a case study and concluding design parameters. Presentation through detailed sketches, drawings & study models and material board to demonstrate the design process from the conceptual stage to the final furniture product design

Course Outcomes: At the end of the course, students will be able to –

- Learn about various aspects of alternative construction techniques.
- Apply the knowledge of construction techniques in building design.
- Design prototypes of buildings using non-conventional building methods and compare them with conventional methods. Syllabus: 15 weeks (2.5 hours/week)
- 1 Overview Importance of Alternative construction technique
- Pros and cons of Alternative construction technique
- 2 Approaches to different techniques
- Techniques Material
- Processes Case study and presentation to explain the same
- **3 Alternative techniques of load-bearing construction** Different materials i.e. Brick, Stone, Mud and their construction techniques Case study and presentation to explain the same
- **4 Alternative techniques of frame construction** Study different Alternative techniques of frame construction i.e. light steel frame construction, long-span construction, etc. Case study and presentation to explain the same
- **5 Alternative techniques of composite construction •** Study of different Alternative techniques of a combination of load-bearing & frame construction i.e. Vernacular buildings Case study and presentation to explain the same
- **6 Non-conventional material •** Study of non-conventional material as building material Case study and presentation to explain the same
- **7 Comparing conventional and alternative construction Cost compression Durability Maintenance Easy of construction Suggested Readings**:
- Elizabeth Lynne and Adams Cassandra. (2000). Alternative Construction Systems: Contemporary Natural Building Methods.

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COURSE CONTENT

ARCH 519: ELECTIVE - V

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New York, NY: John Wiley & Sons.

- Johan van Lengen. (2008). The Barefoot Architect: A Handbook for Green Building. Bolinas, CA, 94924 USA: Shelter Publications.
- Levy Matthys and Salvadori Mario. (2002). Why Buildings Fall: How Structures Fail. New York: W.W. Norton

Course Outcomes: At the end of the course, students will be able to -

- Understand the behavior of material and structural properties in a lightweight structure
- Learn about lightweight structure from concept to the actual construction process
- Apply knowledge to design and build lightweight structures
 - Process of building structure Structure and Structure form
 What are Structure and its importance in Architecture?
 Structural form solid, Surface, skeleton, Membrane,
 hybrid Structural form in Nature Structural form man made Structural material strength, stiffness, shape
 - The broad categorization of structural system Structure types Membrane - Cable/membrane tents, cable nets, pneumatics Hybrids - Tension-assisted structures
 - States of stresses Vertical, Horizontal, Rational settlement and earthquake behavior
 - Basic requirements of structure Structural Elements Strut, tie, beam, slab/plate, panel Structural Element behaviour Tensile, compressive, shear, torsion, bending Model testing and discussion Discussion on why it fails?
 - Types of loads & supports Load on Structure Permanent Temporary Dead load, Imposed load, Thermal load, Dynamic load
 - At the end of the course, students will be able to -
 - Interpret the importance and relevance of Graphic Signage
 - Illustrate the use of various techniques of typography
 - Develop knowledge of various compositions based on the typology
 - **Objective**: To explore and investigate the visual representation of data through a range of techniques and to understand the basic working of elements and principles for composition in various mediums.
 - Outline: Fundamentals of graphic design: To convey denotative and connotative messages using analogue and digital image-making techniques. A Radical Approach to learning typographic terminology and rules

Lightweight structures

Graphics design

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COURSE CONTENT

ARCH 519: ELECTIVE - V

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for creating typography in both a functional and expressive manner. Using elements - Shapes, Textures, patterns and colours, an abstract design is processed by composing work that ranges from complex to minimal. Plan, Grids and layout. Progress in graphic design: Awareness of the relationship of design history to create new designs in digital art. An outline of the evolution of Graphics from Industrialization to the present: Various stylistic transformations, branding and other movements. Understanding the current design trends, tools, and techniques for future visions in the field of graphic design. Branding & advertisement: To explore various types of logo design and study of brand and its identity. To comprehend and analyze different products, their material - medium of packaging and scheming based on the fundamentals of graphics to appeal to the endusers.

- Infographics & web design: To acquire knowledge on Plans, Grids and layouts applied in infographics. To explore making maps and various charts that focus on the bar, line, and pie using software mediums like Adobe Photoshop, Illustrator and other page layout software etc.
- History Brief History of Signage
- Symbol, Signs & Pictograms Symbol, Signs & Pictograms
- Principles s in graphic design Principles of Compositions in graphic design and Detail (Importance of Visual Balance & colours in signage)
- Types of Signage Different types of Signage Indoor &
- Introduction Of graphic Software I.E. Coral Draw, Adobe Photoshop, Adobe Illustrators, Lightroom (Over View And Biggner Level Exploration)
- Execution of Graphics Introduction Of Printing or/and physically various methods of execution of graphics
- Rafael Concepcion (2018). Adobe Photoshop CC and Lightroom CC for Photographers Classroom in a Book, 2nd Edition, Adobe Press.
- Meggs, P. B., Purvis, A. W., & Meggs, P. B. (2006). Meggs' history of graphic design. Hoboken, N.J: J. Wiley & Sons. Cees W. de Jong, Alston W. Purvis, Jan Tholenaar (2019). Type: A Visual History of Typefaces and Graphic Styles, Taschen GmbH Mendiritta B D, Composing and typography today, 1983 Knuth Donald E, Digital typography, 1999 Heller Steven; Fernandes Teresa, Becoming a graphic designer, 2007. Gill Bob, Graphic design as a second language, 2003 Gordon Bob; Gordon Magic, Complete guide to digital graphic design, 2002 Street Rita; Ferdinand, Touch: Graphic design with tactile appeal, 2001



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COURSE CONTENT

ARCH 520: SEMINAR I

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L-THEORY, S-STUDIO, T-TUTORIAL C - CREDIT, HRS. HOURS, MST - MIDTERM TEST, A MST - AVERAGE OF MIDTERM, ESUE - END SEMESTER UNIVERSITY EXAMINATION; IA - INTERNAL ASSESSMENT PROGRESSIVE, SS-FOLIO FINAL Sessional (INTERNAL), EV - EXTERNAL VIVA VOICE, RVW - INTERMEDIATE REVIEW

ARCH 520: SEMINAR I

Syllabus: 15 weeks (2 hours/week) Total Teaching hours: 30 Hrs.

COURSE OBJECTIVE:

architectural communication is emphasized

COURSE OUTCOME:

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

- Learn about various approaches to research in the field of Architecture
- Explore various aspects related to research
- Develop a preliminary research proposal

EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

• a seminar on what is architecture addressing as an introduction to it.

COURSE OVERVIEW:

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

COURSE CONTENTS:

To inculcate the habit of reading books related to architecture and allied subjects in a structured manner. Course Content This course involves library-based study and report writing. The students are expected to read two or more books in a given subject area or by a particular author, as assigned by the faculty. They are expected to write critical essays, book reviews or research reports based on their readings. In addition, students are expected to follow academic writing and referencing conventions from this Semester onwards.

SR. NO.	SYLLABUS: TOPIC	SUBTOPIC	TEACHING HOURS:
1		 Introduce undergraduate students to contemporary architectural culture. Introduce students to projection through scales. Develop critical problem-solving skills based on architectural design methodologies. Provide an introduction to the tools and materials associated with an architectural education. Develop public speaking and presentation skills. 	
2	Introduction to Research	What is research?Types of research.Social research and Architectural research.	7 hrs.
3	Formation of a research idea	 Literature Review Formation of Aim and Objective. Research scope and limitation. The output of research. 	17 hrs.

This shall be the outcome of logical research on a topic related to any aspect of Architecture and allied subjects. It is expected that the students will demonstrate effective oral presentation

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COURSE CONTENT

ARCH 520: SEMINAR I

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L-THEORY; S-STUDIO, T-TUTORIAL; C - CREDIT; HRS. HOURS, MST - MIDTERM TEST, A MST - AVERAGE OF MIDTERM, ESUE - END SEMESTER UNIVERSITY EXAMINATION; IA - INTERNAL ASSESSMENT PROGRESSIVE, SS-FOLIO FINAL Sessional (INTERNAL), EV - EXTERNAL VIVA VOICE, RVW - INTERMEDIATE REVIEW

in a hall of audience, as well as structured writing. Students may choose a topic related to theory/philosophy / current issues related to architecture and allied subjects. The topics must be vetted by the subject teacher/s. The emphasis must be on critical understanding, logical reasoning, and structured argument/discussion about the topic chosen. The student is expected to draw inferences based on a structured study as above. By the end of the semester, students are expected to submit a written paper of approximately 2000 words. Students must adhere to Standard referencing conventions and technical writing norms. The final assessment of the student's work may be based on oral communication as well as written communication. However, greater weightage may be given to the oral communication of the students.

NOTE:-

Evaluation: Stages: Proposal, Mid-Review and final submission of the paper. Students' contribution to the topic/area is of critical importance.

SUGGESTED READINGS:

Hammon, Michal and Jerry wellington .2013. Research Method: The Key Concepts.NewYork: Routledge

Creswell, John W. 2009. Research Design: Qualitative, Quantitative and mixed methods Approaches. 1000 oaks,

Warburton, Nigel. 2006. The Basics of essay writing. New York: Routledge

Turabian, Kate L 2007. A manual for Writer of Research Papers, Thesis and Dissertation, Seventh Edition Chicago: University of Chicago Press.

Wehrli, Robert, Environmental Design Research: How to Do It and How to Apply It, New York, Wiley: 1986

Todd, Alden, Finding Facts Fast: How to Find Out What You Want and Need to Know, Berkeley, Ten Speed Press: 1979

Snyder, James, Architectural Research, New York, Van Nostrand Reinhold: 1984

Zeisel, John, Inquiry by Design: Tool for Environment-Behavior Research, Cambridge, Cambridge University Press: 1981

Sandhoff, Henry, Visual Research Methods in Design, Van Nostrand Reinhold: 1991