

2<sup>ND</sup> YEAR / III Semester

**ARCH 301: ARCHITECTURAL DESIGN STUDIO - II**

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION						TOTAL MARKS	EXAM DURATION (HRS)			
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY				STUDIO						
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOT AL			IA 10% OR 60%	EV 10% OR 40%	TOTAL
ARCH 301	AR	STUDIO	ARCHITECTURAL DESIGN STUDIO II			1 2	1 2	8							240	160	400	400	

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

**COURSE OVERVIEW:**

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

**OBJECTIVES OF THE COURSE:**

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.

**EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:**

Use of standards, handling of space, and application of knowledge gained from other subjects in design.

FOCUS: Material, Structure & Form

- The student will study and analyze the design and structural principle form natural object.
- The student will explore the inspiration from nature for design.
- The student will apply from the above exercise, into the design, construction of the man-made proposal.

**COURSE CONTENTS:**

- Nature as source of inspiration on design.
- The design process and product in nature.
- Data collection and compilation analysis inference as an understanding of the design in nature.
- Application of above learning, translate into man-made product.
- Correlation between material, structure and form.
- Man- Nature Interface in generating space, place
- Theme & Focus of Design: User-activity analysis; context; Functional & aesthetic requirements for development of design programme; 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: 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.
- Form Development: 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 (sketches, physical & digital models).
- Design Analysis: Exploration & analysis of existing iconic Residential Architecture; Understanding design philosophy & process; Learning from design quality; Literature/book reviews; Architectural critiques.
- 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.

**GUIDELINES**

- One Major And Minor tasks/ exercises are to be set from the entire syllabus
- The topic of the project is to be displayed on Institute Notice Board fifteen days in advance OF commencement of the classes

**NOTE :**

- Necessary theoretical inputs 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 exercises 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 end exam which is a viva-voce, the students have to present the entire semester 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

**REFERENCE BOOKS:**

**Chiara Joseph de and Others.** Time Savers Standards of Building Types. McGraw – Hill, 1980.

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

**MarkMorris,** 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

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

**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

Encyclopaedia Of Vernacular Architecture by Paul Oliver

- Vernacular Architecture In The Twenty-First Century by Marcel Vellinga & Lindsay Asquith
- Architecture without Architects by Bernard Rudofsky
- Architecture For The Poor by Hassan Fathy

## ARCH 303: BUILDING CONSTRUCTION & MATERIALS – III

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION								TOTAL MARKS	EXAM DURATION (HRS)	
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO					
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOTAL	IA 10% OR 60%	EV 10% OR 40%			TOTAL
ARCH 303	TE	THEORY CUM STUDIO	BUILDING MATERIALS & CONSTRUCTION – III	1		2	3	2	15	15	15	45	60	120	0	30	30	150	3

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,RVV - INTERMEDIATE REVIEW

### COURSE OVERVIEW:

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

### OBJECTIVES OF THE COURSE:

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.

### EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

To understand the techniques of constructing using different materials

### FOCUS: ADVANCED COMPONENTS

- The student will develop the understanding of the principle of frame structure system
- The student will understand various spanning system
- The student will develop an understanding of R.C.C

### COURSE CONTENTS:

- Temporary structures such as shoring, strutting, formwork, scaffolding, etc.
- Basic application skills of Fundamentals of Reinforced Cement Concrete: Superstructure, Horizontal Support Systems: Slab & Roof Systems: Vertical Support Systems:
- Steps, staircase, ramp, threshold – definition, types of stairs with different materials, plans, sections, elevations and enlarged details.
- Advanced Door Types

### GUIDELINES FOR QUESTION PAPER SETTING

All Theory cum studio-based courses

- Part- A (5 NOS X 6 MARKS = 30 MARKS) Answer all questions
- Part- B (2 NOS X15 MARKS = 30MARKS)
- (Either or type)

(Since they are a mix of drawing and theory content, all

Part-A questions relate theory

Part-B questions are drawing based.

It is not possible for a candidate to answer more than 4 drawing questions in a three-hour duration)to theory and all

- Students will be required to attempt 5+2 questions from the Eight questions, are to be set from entire syllabus. where 2 questions may be short answer , 2 questions may be short answer type with 2- 3 subheads and 2, short with 4 subheads answer type and 2 essay type questions which is compulsory.
- Students should attempt total 7 Questions including the compulsory question.
- Question paper is to be set covering the entire syllabus.

**Note:** This is a studio subject and students should be made to prepare construction drawings for studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate side visits.

### REFERENCE BOOKS:

- Kotadiya A. S. Building Construction. : Mahajan Publishing, 2014
- Barry, R. Construction of Buildings Vol - 3: Single Storey Frames, Shells and Lightweight Coverings. New Delhi: Affiliated East-West Press Pvt. Ltd., 1999
- Barry, R. Construction of Buildings Vol - 4: Multi-Storey Buildings, Foundation and Substructures, Structural Steel Frames, External Walls and Cladding of Framed Buildings. New Delhi: Affiliated East-West Press Pvt. Ltd., 1999
- Barry, R.. Construction of Buildings Vol - 1: Foundations and Oversite Concrete, Walls, Floors, Roofs. New Delhi: Affiliated East-West Press Pvt. Ltd., 1999
- Barry, R.. Construction of Buildings Vol - 2: Windows, Doors, Fibers, Stairs Finishes. New Delhi: Affiliated East-West Press Pvt. Ltd., 1999
- Biggs, John M.. Introduction to Structural Dynamics. New Delhi: McGraw Hill Education India Pvt Ltd, 2014
- Ching, Francis D. K. Visual Dictionary of Architecture. Delhi: Wiley India (P) Ltd., 2012
- Ching, Francis D. K. Building Structures Illustrated. New York: John Wiley & Sons, Inc., 2014
- Ching, Francis D. K. Building Construction Illustrated. 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

17. Khasiya, R. B; Mottani A. T. Advanced Surveying. Ahmedabad: Mahajan Publishing, 2015
18. Kumar, Sushil. Building Construction. New Delhi: Standard Publishers Distributors, 2012
19. Laursen, Harold I.. Structural Analysis. New Delhi: McGraw Hill Education India Pvt Ltd, 2014
20. Levy, Matthys. Why Buildings Fall Down: How Structures Fail. New York: W. W. Norton and Co., 2002
21. McKay J. K. Building Construction Vol - 2: Metric. Delhi: Pearson Education Asia Pte. Ltd., 2014
22. McKay, J. K. Building Construction Vol - 3: Metric. Delhi: Pearson Education Pte. Ltd., 2013
23. McKay, J. K. Building Construction Vol - 4: Metric. Delhi: Pearson Education Pte. Ltd., 2013
24. McKay, W. B.. Building Construction Vol - 1: Metric. New Delhi: Pearson Education Asia Pvt. Ltd.; India, 2013
25. McLeod, Virginia. Detail In Contemporary Timber Architecture. UK: Laurence King Publishing, 2010
26. Millias, Malcolm. Building structures from concept to design. London: Spon Press, 2005
27. Muttoni, Aurelio. Art of Structures: Introduction to the Functioning of Structures in Architecture. UK: Taylor & Francis, 2011
28. Pandit, G. S. Structural Analysis: A Matrix Approach. New Delhi: Tata McGraw-Hill Publishing Company Ltd., 2008
29. Parikh, Janak. Understanding Concept of Structural Analysis and Design. Anand: Charotar Publishing House, 2000
30. Paulson, Boyd C.. Computer Applications in Construction. New Delhi: McGraw Hill Education India Pvt Ltd, 2014
31. Phillips, David. Detail In Contemporary Concrete Architecture. UK: Laurence King Publishing Ltd, 2012
32. Punaima, B. C.. Comprehensive Design of Steel Structures. New Delhi: Laxmi Publications Pvt. Ltd., 2012
33. Punmia, B. C.. Building Construction. New Delhi: Laxmi Publications Pvt. Ltd., 2008
34. Rangwala, S. C.. Building Construction. Anand: Charotar Publishing House, 2014
35. Rangwala, S. C.. Surveying and Leveling. Anand: Charotar Publishing House, 2011
36. Ruske, Wolfgang. Timber Construction for Trade, Industry, Administration: Basics and Projects. Switzerland: Birkhauser- Publisher of Architecture, 2004
37. Salvadori, Mario. Why Buildings Stand Up: The Strength of Architecture. New York: W. W. Norton and Co., 1980
38. Sandaker, Bjorn N. Structural Basis of Architecture. UK: Taylor & Francis, 2011
39. Schillaci, Fabio. Construction and Design Manual Architectural Renderings. Germany: Dom Publishers, 2010
40. Schodek, Daniel L.. Structures. New Delhi: PHI Learning Private Limited, 2014
41. Shah, M. G.. Building Drawing: With an Integrated Approach to Built Environment. New Delhi: McGraw-Hill Publishing Company Ltd., 2013
42. Shah, M. G.; Padki, S. Y. ; Kale, C. M.. Building Construction Vol - 4: Metric. New Delhi: Tata McGraw Hill Education Ltd., 2015
43. Watson, Donald. Time Saver Standards for Building Materials and Systems: Design Criteria and Selection Data. New Delhi: Tata McGraw Hill Education Private Limited, 2009
44. Watts, Andrew. Modern construction handbook. New York: Springer, 2013
45. . Roof Design. Newyork: DAAB Publication, 2007

## ARCH 304 ARCHITECTURAL DRAWING – III

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION							TOTAL MARKS	EXAM DURATION (HRS)		
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO					
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOT AL	IA 10% OR 60%			EV 10% OR 40%	TOTAL
ARCH 304	SK	STUDIO	ARCHITECTURAL DRAWING - III			3	3	2							60	40	100	100	

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### COURSE OVERVIEW:

The course is intended to develop the techniques of architectural drawing pertaining simple and complex Building Documentation.

### OBJECTIVES OF THE COURSE:

Visual documentation enables to enhance the effective use of graphics and artistic skill for visual communication. Measured drawing helps to develop an understanding of real built spaces and represent them graphically.

### 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

### COURSE CONTENTS:

- Introduction to drawing techniques and advanced 2d drafting techniques:
- Measured drawing:
  - Architectural Documentation:
  - Plans & Sections Of Buildings:
- Sketching

**Note:** 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.

### GUIDELINES

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

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

**NOTE:** 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

### REFERENCE BOOKS

**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.  
 Billings, Lance Bowen. Perspective-Space and design.  
**Bhatt, N.D. and Panchal V.M.** Engineering Drawing: Plane and Solid Geometry, 42nd ed. Charotar Pub., Anand, 2000.  
 Burden, Ernest. Architectural Delineation: A photographic approach to presentation, 2nd Ed. McGraw-Hill, Inc., New York, 1982.  
**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.  
 Drawing and Painting Architecture by Rayeuans Pub. Van Nostrand Reinhold Company, New York  
 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.  
**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  
**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: Mc Graw Hill.  
 Ching, F. D. K. (2011). A Visual Dictionary of Architecture. 2nd Ed. Hoboken: John Wiley & Sons.  
 Lockard, W. K. (1992). Drawing as a Means to Architecture. 6th Ed. New York: Van Nostrand Reinhold Company.

## ARCH 305: HISTORY OF ARCHITECTURE - III

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION							TOTAL MARKS	EXAM DURATION (HRS)	
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO				
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOT AL	IA 10% OR 60%			EV 10% OR 40%
ARCH 305	AR	THEORY	HISTORY OF ARCHITECTURE III	2			2	2	10	10	10	50	40	100			100	3

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

### 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 –

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 e.g. to represent the following historical styles are suggestive & students are encouraged to explore additional e.g. for a comprehensive understanding of the respective styles.

### OBJECTIVES OF THE COURSE:

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 in relation to time with special emphasis on social, religious and environmental factors.

To make the students understand the developments in the construction technology in different periods.

### 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: Medieval World

- The student will develop the understanding of architecture and urban form in settlements of the medieval period
- The student will get exposure to the processes and causes that led to the creation of the architecture of the middle ages

### COURSE CONTENTS:

- Architecture in India in the Gupta & Medieval periods studied at the scales of settlements, institutions, dwelling and community form
- Islamic architecture in the Middle East & Central Asia
- Japanese Architecture as a comparison of a codified system
- Romanesque & Gothic Architecture as the continuous evolution of artisanal craft and structural principle.

### GUIDELINES FOR QUESTION PAPER SETTING

All Theory Courses

- Part- A (5 NOS X 2 MARKS = 10 MARKS) Answer all questions
- Part- B (2 NOS X15 MARKS = 30 MARKS)
- (Either or type)

• Students will be required to attempt five questions from the Eight questions, are to be set from entire syllabus. where 2 questions may be short answer type which is compulsory with 2- 3 subheads and 2, short with 4 subheads answer type and 4 essay type questions.

• Students should attempt total Seven Questions including the compulsory question.

• Question paper is to be set covering the entire syllabus.

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

**Reference books:**

- A.Volwahren**, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
- Brown, Percy**, Indian Architecture: Buddhist and Hindu Periods. D.B. Taraporevala Sons and Co., Mumbai, 2003.
- George Mitchell**, Monuments of India, Vol I, Buddhist, Jain, Hindu; Penguin books, 1990
- Grover, Satish**, The Architecture of India. (Buddhist and Hindu period), Vikas Pub. House Pvt. Ltd., Ghaziabad, 1980.
- Guruswamy Vaidyanathan** Gateway to Indian Architecture, Edifice Publication, 2003
- Rowl, Benjamin**, Art and Architecture of India.
- Tadgell, Christopher**, The History of Architecture in India: from the Dawn of Civilization to the End of the Raj. Om Book Service, New Delhi, 1990. Longman Group, U.K. Ltd., London, 1990
- Vistara**, The Architecture of India
1. V.I. Atroshenko and Judith Collins, The Origins of the Romanesque (Lund Humphries, London) 1985
  2. Fletcher, Banister. Sir Banister Fletcher's A History of Architecture. London: Butterworths, 1987. Print.
  3. Kostof, Spiro. A History of Architecture: Settings and Rituals. New York: Oxford UP, 1985. Print.
  4. Joachim E. Gaehde (1989). "Pre-Romanesque Art". Dictionary of the Middle Ages
  5. Tadgell, Christopher. A History of Architecture. London: Ellipsis, 2000. Print.
  6. Ching, Francis D. K., Mark Jarzombek, and Vikramaditya Prakash. A Global History of Architecture Hoboken, NJ: J. Wiley & Sons, 2007. Print.
  7. History of World Architecture. London: Faber, 1979. Print
  8. Norberg-Schulz, Christian, and Pier Luigi Nervi. History of World Architecture. New York: Abrams, 1971. Print.
  9. Bagenal, Philip. The Illustrated Atlas of the World's Great Buildings: A History of World Architecture .. S.1.: Leisure, 1980. Print.
  10. Fazio, Michael W., Marian Moffett, Lawrence Wodehouse, and Marian Moffett. A World History of Architecture. Boston: McGraw-Hill, 2008. Print.
  11. Browne, Edith A. (2005). Romanesque Architecture. Kessinger Publishing
  12. Grabar, O. (1980). "Kūbbat al-Ṣakhra". In Bosworth, C. E.; van Donzel, E.; Lewis, B.; et al. The Encyclopaedia of Islam, Volume 2, Part 1 (new ed.). Leiden: E. J. Brill.
  13. Hillenbrand, Robert (1994). Islamic Architecture: Form, Function, and Meaning. New York: Columbia University Press
  14. Willis, R. (1835). Remarks on the Architecture of the Middle Ages, Especially of Italy. Cambridge: The Pitt Press.
  15. Moffett, Marian; Fazio, Michael W.; Wodehouse, Lawrence (2003). A World History of Architecture (Illustrated ed.). London: Laurence King Publishing.
  16. Krautheimer, Richard (1986). Early Christian and Byzantine Architecture (4 ed.). Yale University Press
  17. Jones, Tom Devonshire; Murray, Linda; Murray, Peter, eds. (2013). The Oxford Dictionary of Christian Art and Architecture (Illustrated ed.). Oxford University Press
  18. Braun, Hugh, An Introduction to English Mediaeval Architecture, London: Faber and Faber, 1951
  19. Watkin, David (Sep 2005), A History of Western Architecture, Hall Publications
  20. Kubach, Hans Erich: Romanesque Architecture, 1988

## ARCH 306: CLIMATIC DESIGN

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION							TOTAL MARKS	EXAM DURATION (HRS)	
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO				
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOTAL	IA 10% OR 60%			EV 10% OR 40%
ARCH 306	AR	THEORY	CLIMATIC DESIGN	2			2	2	10	10	10	50	40	100			100	3

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,RVV - INTERMEDIATE REVIEW

### COURSE OVERVIEW:

This subject area also known by the term building science in earlier times enlightens the students to the processes by which building 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 as related to climate, particularly to tropical climates as found in India.

### OBJECTIVES OF THE COURSE:

To equip the student with the 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

### 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 in relation to the natural and built environment.

- 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 modifying factor of the built environment.
- The student will learn various climate-controlling devices.

### COURSE CONTENTS:

- **Introduction to climatic design: Impact of climate on design:**
- **Bioclimatic & low-energy design:** Understanding the sun path & shading devices, the orientation of the building, openings- sizes, position. Examples of Low-energy projects & discussion on solar architecture.
- **Introduction to climatology :**
  - Elements of climate, & their impact on global, local, site & building context. Energy use & its implications. Introduction to Micro (site) climate
  - Introduction to urban heat island effect.
  - **Thermal Comfort**
  - **Integrated passive design:**
  - **Introduction to simulation software**

### GUIDELINES FOR QUESTION PAPER SETTING

All Theory Courses -

- Part- A (5 NOS X 2 MARKS = 10 MARKS) Answer all questions
- Part- B (2 NOS X15 MARKS = 30 MARKS)
- (Either or type)
  - Students will be required to attempt five questions from the Eight questions, are to be set from entire syllabus. where 2 questions may be short answer type which is compulsory with 2- 3 subheads and 2, short with 4 subheads answer type and 4 essay type questions.
  - Students should attempt total Seven Questions including the compulsory question.
  - Question paper is to be set covering the entire syllabus.

**NOTE:-**Emphasis should be laid on understating of building evolution and form w.r.t climate. The continuous evaluation shall be made of students work based on various models, assignments and sketching

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

### RECOMMENDED BOOKS:

**A.Konya-** Design Primer for Hot Climates, Architectural Press, London, 1980.

- B. Givoni** - Man, Climate & Architecture, Applied Science, Essex 1982.  
**De**, Environment Chemistry  
**Donald Watson & Kenneth Ibs** - Climatic Design - McGraw Hill New York 1983.  
**E. Schild & M. Finbow** - Environmental Physics in construction & its application in Architectural Design, Granada, London, 1981.  
**Koenigsberger, O.H. and Others**. Manual of Tropical Housing and Building. Orient Longman, Chennai, 2003.  
**Konya, Allan**. Design for Hot Climates.  
**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.  
**Olgay and Olgay**. Solar Control and Shading Devices.  
**Sharma and Kaur**, Environmental Pollution
- An Introduction To Building Physics by Narasimhan
  - Manual Of Tropical Housing And Building - Part I - Climatic Design by O.H. Koenigsberger
  - Housing Climate & Comfort by M. Evans
  - Man, Climate And Architecture, Applied Science, Banking Essex by B. Givoni
  - Climatic Design by Donald Watson
-

## ARCH 307: THEORY OF STRUCTURES – II

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION							TOTAL MARKS	EXAM DURATION (HRS)	
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO				
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOTAL	IA 10% OR 60%			EV 10% OR 40%
ARCH 307	TE	THEORY	THEORY OF STRUCTURE II	2			2	2	10	10	10	50	40	100			100	3

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

### COURSE OVERVIEW:

Gives an in-depth understanding of the concepts associated with different Elements of Structures. Structural systems- ways to create inner space; Understanding loads of various types understanding the forces and Moments –

Definition, cause, effect, units Types of forces, Conditions of equilibrium Beam reactions

### OBJECTIVES OF THE COURSE:

To provide knowledge of different forces, force systems, Beams types sectional Properties behaviour of different members due to applied forces.

### EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

- Basic principles of mechanics and behaviour of elements of structures.
- The student will develop conceptual understanding by using the abstract method of analysis of structures.
- The student will develop the understanding of basic requirement of stability, the strength of the material
- The student will learn the behaviour of basic structural elements and their importance in Structural System.

### COURSE CONTENTS:

#### STRUCTURAL CONCEPTS IN ARCHITECTURE

Theory of simple bending Introduction, pure bending & ordinary bending, Assumptions derivation of flexure formula section modulus Numericals on flexure equation.

- 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, Welded joints: Introduction, Advantages and disadvantages of welded joints, types, the strength of fillet weld, the design of welded joint for plates and unsymmetrical sections for axial loading
- Resolution of forces
- The concept of triangulation and its application in pin jointed trusses
- The assumption about the strength of materials, basic terminology, 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.
- Stability, buckling of columns, short and long columns.
- Deflection and its importance, code provisions, the study of the deflected shape of simple structures. Solutions to problems.

Propped Cantilevers Introduction, Reaction of a prop, Cantilevers with Udl's, point loads, prop at the end & at intermediate positions, slope & deflection

- The concept of shear stress, average and maximum shears stress. Horizontal shear stress and its variation across the cross-section of the beam.
- Shear stresses in beams Introduction, stress distribution for standard shapes like rectangle circle triangle I, T L, C Section, Direct & bending Stresses Introduction,

### GUIDELINES FOR QUESTION PAPER SETTING

All Theory Courses -

- Part- A (5 NOS X 2 MARKS = 10 MARKS) Answer all questions
- Part- B (2 NOS X15 MARKS = 30 MARKS)
- (Either or type)

• Students will be required to attempt five questions from the Eight questions, are to be set from entire syllabus. where 2 questions may be short answer type which is compulsory with 2- 3 subheads and 2, short with 4 subheads answer type and 4 essay type questions.

• Students should attempt total Seven Questions including the compulsory question.

• Question paper is to be set covering the entire syllabus.

**Reference Books:**

- Junarkar S. B., Mechanics of Structures Vol 1, Charotar Publishing House, India, 1995  
 Khurmi. R.S. Engineering Mechanics, S. Chand and Co.Ltd., New Delhi, 1999.  
 Laudner T.J. and Archer R.R., Mechanics of Solids in Introduction, McGraw - Hill International Editions, 1994  
 POPOV, E.P., Mechanics of solids, Prentice - Hall Inc, Englewood Cliffs, New Jersey - 1976  
 Ramamrutham. S. Engineering Mechanics, 7th Ed. Dhanpat Rai Pub. Co. Ltd., Delhi, 2004.  
 S. Ramamrutham and Narayanan R., Strength of Materials, Dhanpat Rai Publications, New Delhi, 2002  
 Timoshenko, C.P., and Gere., Mechanics of materials, McGraw - Hill Book Company, New York, 1984  
 Timoshenko. S. and Young, D.H. Engineering Mechanics, McGraw-Hill International Editions  
 1. James Ambrose, Building Structure, Canada Wiley, 2012  
 2. Ching, Francis D. K., Building Structures Illustrated, New York, John Wiley & Sons, Inc., 2014  
 3. Deplazes, Andrea, Constructing Architecture Materials Processes Structures: A Handbook, Switzerland, Birkhauser- Publisher of Architecture, 2013  
 4. Barry, R., Construction of Buildings Vol. 1: Foundations and Oversite Concrete, Walls, Floors, Roofs, New Delhi, Affiliated East-West Press Pvt. Ltd., 1999  
 5. Biggs, John M., Introduction to Structural Dynamics, New Delhi, McGraw Hill Education India Pvt Ltd, 2014  
 6. Junnarkar, S. B., Mechanics of Structures Vol – 1, Anand, Charotar Publishing House, 2012  
 7. Onouye, Barry S., Statics And Strength Of Materials For Architecture And Building Construction, Chennai, Pearson India Education Services Pvt Ltd., 2015  
 8. Khurmi, R. S., Strength of Materials: Mechanics of Solids, New Delhi, S. Chand & Company Ltd., 2013  
 9. Laursen, Harold I., Structural Analysis, New Delhi, McGraw Hill Education India Pvt Ltd, 2014  
 10. Hibbeler, Russell C., Structural Analysis, India, Pearson Education Asia Pte. Ltd., 2013  
 11. Pandit, G. S., Structural Analysis: A Matrix Approach, New Delhi, Tata McGraw-Hill Publishing Company Ltd., 2008  
 12. Charleson, Andrew., Structure as architecture: Sourcebook for architects and structural engineers, London, Taylor & Francis, 2015  
 13. Ball, N. P., Textbook of Engineering Mathematics, New Delhi, Laxmi Publications Pvt. Ltd., 2011  
 14. Ramamrutham, S., Theory of Structures, Delhi, Dhanpat Rai & Sons, 2013  
 15. Kumar, Ashok, Theory of Structures, New Delhi, Laxmi Publications Pvt. Ltd., 2004  
 16. Parikh, Janak, Understanding Concept of Structural Analysis and Design, Anand, Charotar Publishing House, 2000  
 17. Levy, Matthys, Why Buildings Fall Down: How Structures Fail, New York, W. W. Norton and Co., 2002  
 18. Salvadori, Mario, Why Buildings Stand Up: The Strength of Architecture, New York, W. W. Norton and Co., 1980  
 19. Schodek, Daniel L. Structures. Englewood Cliffs, NJ: Prentice-Hall, 1980. Print.  
 20. Millais, Malcolm. Building Structures: From Concepts to Design. London: Spon, 2005. Print.  
 21. Corkill, P. A., H. L. Puderbaugh, and H. K. Sawyers. Structure and Architectural Design. Iowa City: Sernoll, 1974. Print.  
 22. Ambrose, James E. Building Structures. New York: Wiley, 1988. Print.  
 23. Burns, John A. Recording Historic Structures. Washington, D.C.: American Institute of Architects, 1989. Print.  
 24. Forsyth, Michael. Structures & Construction in Historic Building Conservation. Oxford, UK: Blackwell, 2007. Print.  
 25. Muttoni, A. The Art of Structures: Introduction to the Functioning of Structures in Architecture. Abingdon, Oxford, UK: EPFL/Routledge, 2011. Print.  
 26. Sandaker, Bjørn Normann, and Arne Petter. Eggen. The Structural Basis of Architecture. New York: Whitney Library of Design, 1992. Print.  
 27. Seward, Derek. Understanding Structures: Analysis, Materials, Design. Basingstoke: Palgrave Macmillan, 2003. Print.  
 28. 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. Print.  
 29. Salvadori, Mario, and Robert A. Heller. Structure in Architecture: The Building of Buildings. Englewood Cliffs, NJ: Prentice-Hall, 1975. Print.  
 30. Salvadori, Mario, Saralinda Hooker, and Christopher Ragus. Why Buildings Stand Up: The Strength of Architecture. New York: Norton, 1980. Print.  
 31. Cowan, Henry J. Architectural Structures: An Introduction to Structural Mechanics. New York: Elsevier, 1976. Print.  
 32. Gordon, J. E. The New Science of Strong Materials, Or, Why You Don't Fall through the Floor. Princeton, NJ: Princeton UP, 1984. Print.  
 33. Mainstone, R. J. Structure in Architecture: History, Design, and Innovation. Aldershot, Hampshire: Ashgate, 1999. Print.  
 34. 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. Print.  
 35. Morgan, William, Daniel Williams, and Frank Durka. Structural Mechanics: A Revision of Structural Mechanics. Harlow: Longman, 1996. Print.  
 36. Watson, Donald, Time saver Standards for Building Materials and Systems: Design Criteria and Selection Data, New Delhi, Tata McGraw Hill Education Private Limited, 2009  
 37. National Building Code of India, 1983, Part VI, Structural Design.  
 38. IS 883 – Code of Practice for Design of Structural Timber in Buildings IS 800 – Code of Practice for use of Structural Steel in General Building Construction

## ARCH 308: COMPUTER APPLICATION I

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION							TOTAL MARKS	EXAM DURATION (HRS)		
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO					
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOTAL	IA 10% OR 60%			EV 10% OR 40%	TOTAL
ARCH 308	SK	STUDIO	COMPUTER APPLICATION I			1	1	2							60	40	100	100	

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

### OBJECTIVES OF THE COURSE:

The course imparts basic knowledge on 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.

### EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

Developing overall skills in various computer-aided tools, processes and presentation.

FOCUS: Computer

- 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:

- CAD Drafting (e.g. AutoCAD, Archicad, Rhino, Vector work, etc.)
- CAD Modeling I (e.g. Sketch Up, etc.)
- 3D Rendering & Architectural Visualization (Vray, 3D Max, Lumion, etc.)

### GUIDELINES

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

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

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

### NOTE :

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

### REFERENCE BOOKS:

1. John, Elys. CAD Fundamentals for Architecture. London: Laurence King, 2013. Print.
2. Scott Onstott. Enhancing architectural drawing and models with Photoshop. Sybex
3. Daniel Tal., Rendering in sketchup. Wiley
4. Gladfelter, Donnie. AutoCAD 2013 and AutoCAD LT 2013: No Experience Required. Indianapolis, IN: Wiley, 2012. Print

## ARCH 309: BUILDING SYSTEMS AND SERVICES -I

### SURVEYING AND LEVELLING

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION									TOTAL MARKS	EXAM DURATION (HRS)
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO					
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOT AL	IA 10% OR 60%	EV 10% OR 40%	TOTAL		
ARCH 309	TE	THEORY	BUILDING SYSTEMS AND SERVICES-I (SURVEY & LEVELLING)	2			2	2	10	10	10	50	40	100				100	3

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

#### COURSE OVERVIEW:

To explain the different techniques and instruments used in a survey of land tracts

#### OBJECTIVES OF THE COURSE:

To explain the techniques and instruments used in a survey of land tracts

#### EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

Surveying skills and related theory.

#### COURSE CONTENTS:

- Introduction
- Chain Surveying: errors and corrections, the composition of Areas.
- Compass Surveying:
- Plane Table Survey:
- Levelling
- Theodolite

#### GUIDELINES FOR QUESTION PAPER SETTING

All Theory Courses

- Part- A (5 NOS X 2 MARKS = 10 MARKS) Answer all questions
- Part- B (2 NOS X15 MARKS = 30 MARKS)
- (Either or type)

- Students will be required to attempt five questions from the Eight questions, are to be set from entire syllabus. where 2 questions may be short answer type which is compulsory with 2- 3 subheads and 2, short with 4 subheads answer type and 4 essay type questions.
- Students should attempt total Seven Questions including the compulsory question.
- Question paper is to be set covering the entire syllabus.

#### Note:

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.

#### REFERENCE BOOKS:

- Arora, K.R. Surveying Vol. 1, 6<sup>th</sup> Ed.** Standard Book House, Delhi, 2000.  
**Lynch, Kevin.** Site Planning. MIT Press, Massachusetts, 1962.  
**Punmia, B.C.** Surveying Vol. 1, 13<sup>th</sup> Ed. Laxmi Publications Pvt. Ltd., New Delhi, 1996.

## ARCH 319: ELECTIVE - III

COURSE	COURSE AREA	COURSE TYPOLOGY	NAME OF THE COURSE	TEACHING SCHEME					EVALUATION							TOTAL MARKS	EXAM DURATION (HRS)			
				L	T	S	CREDIT	TOTAL CLASS HRS	THEORY					STUDIO						
									MST 1 10%	MST 2 10%	A. MST 10%	SS 50% OR 30%	ESUE 40%	TOTAL	IA 10% OR 60%			EV 10% OR 40%	TOTAL	
ARCH 319	SU	STUDIO	ELECTIVE- III ( POOL I)			1	1	2								50		50	50	

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

The creative electives provide an opportunity to express talents which are different from architecture but related to imagination, visualization & creation. They offer a unique experience of ingenuity & creativity. The essence of the creative domain can be achieved by exploring different technology, techniques, processes, concepts, compositions. The outcome will be through portfolio & presentations.

### COURSE OVERVIEW:

The following is a representative list of what may constitute Institute projects:

Seminars, Tutorials/ additional classes for any course, Guest Lectures, putting up Exhibitions, Workshops, participating in Architectural Competitions or conducting Site Visits or Study Tours.

### OBJECTIVES OF THE COURSE:

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

### EXPECTED SKILLS / KNOWLEDGE TRANSFERRED:

better grooming than just books and theories.

### COURSE CONTENTS:

As Per Pool Electives Choices Stage I even semester pool

### GUIDELINES

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

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

### NOTE :

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**  
Board of Studies  
Shri Vaishnav Vidyapeeth Vishwavidyalaya  
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