Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR101	**Title of the Course**	Architecture Design-I	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	1	-	8	13
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. To introduce the student, the fundamentals of design and development of design vocabulary, to nurture design thinking and to enable them to apply the same thought process in development of design. 2. Implementation of design through conceptualization and organization. 3. To hone the creative skill by introducing creative exercises. 4. To sensitize students to be more observant to their surroundings and promote it as a basic creative instinct in them.						

Course Outcomes	
CO1	Know about the fundamentals of design and development of design vocabulary and to apply the same thought process in development of design.
CO2	Implement the design through conceptualization and organization.
CO3	Enhance creative skills through creative exercises.
CO4	Understand their surroundings and promote it as a basic creative instinct.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	**Unit- I**	**Introduction to Architecture and architectural profession.** Elements and Principles of Design/Architecture Types of Form and Transformations. Form, Order and Space in Architecture Addition and Subtractive Transformations in Platonic Solids.	97	1
2	**Unit- II**	**Introduction to human activity and space required for activities**. Suggested Exercises Exercises on Anthropometrics and space standards for different uses through simple sketches and drawings. Exercises to increase perception and sensitivity of the students about space.	10	2
		Studying different objects and modifying them to their necessity. Suggested Exercises Study of common use furniture, equipment and building components. Making presentable sheets on modification of analyzed object.	10	4
3	**Unit- III**	**TIME PROBLEM** a) Design of any small scale shall be carried out in design week from introduction to final Submission b) Design week problems should be introduced on Saturday/ two days before the commencement of the design week for enabling the students to collect literature and relevant data for the exercise. c) The problem introduced in design week to be judged by external experts	36	1,2,3&4

Reference Books:

Design in Architecture - Architecture and Human Science by G. Broadbent.

Learning Basic Design. Mumbai: Rizvi College of Architecture by P. Chauhan

Design Drawing. Hoboken: John Wiley & Sons by F. D. K. Ching

Architecture: Form, Space and Order by F. D. K Ching.

Architect? A Candid Guide to the Profession. Cambridge by K. L. Roger.

1962 Experiencing Architecture. 2nd Rev. Ed. Cambridge: MIT Press. by S. Rasmussen

e-Learning Source:

https://design.tutsplus.com/articles/the-basic-elements-of-design--cms-33922

https://www.invisionapp.com/defined/principles-of-design

https://issuu.com/shreyatripathi/docs/form_and_space_though_contemporary_architecture_by/s/14404894

https://www.strate.education/gallery/news/design-definition

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	**3**	**1**	**-**	**3**	**-**	**-**	**3**	**2**					**2**	**3**	**1**	**1**		
CO2	**3**	**1**	**-**	**2**	**-**	**1**	**2**	**3**					**2**	**1**	**3**	**2**		
CO3	**3**	**1**	**1**	**3**	**-**	**-**	**3**	**2**					**3**	**1**	**2**	**3**		
CO4	**3**	**-**	**-**	**2**	**-**	**1**	**2**	**3**					**3**	**1**	**1**	**1**		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR102	**Title of the Course**	Building Construction and Materials-I	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**-**	**2**	**6**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. Introduction to elementary building construction materials and techniques. 2. To understand the basic physical and chemical properties of the materials.						

Course Outcomes	
CO1	Understanding of Binding materials, their classification, Manufacturing, properties and uses viz. soil, lime and cement.
CO2	Knowledge of basic construction materials, their characteristics, occurrences or production, classification, properties and uses viz. stone, bricks and other clay products.
CO3	Demonstrate fundamental knowledge of the systems and processes used to construct the building, including an understanding of industry terminology.
CO4	Market surveying and case studies so a student acquainted with the latest construction technology & materials.
CO5	Analyze, troubleshoot, and implement solutions in the field based on knowledge and experience.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Soil, Lime & Cement	Soil: Fundamentals of Soil Science, Types of soils, Principles of Soil Stabilization, Types of Stabilizers, Requirements and Types of mud wall building and surface protection; Mud Mortar Lime: Types of lime, Classification of lime and their comparison, Manufacturing process slaking, Hardening – Testing and Storage, Lime putty, Lime Mortar and Lime Concrete. Cement: Manufacturing, its types, properties and uses. Cement Mortar and Cement Concrete.	18	1, 2, 4
2	Rocks, Stones & Clay Products	Rocks: Classification of rocks and its sources, quarrying of stones, Seasoning, Dressing, Stones: Characteristics and testing of stones, Common building stones and their uses, artificial stones, Aggregates for concrete work. Clay Products: Type of bricks, properties and Usage, Sun dried and Burnt clay bricks, classification of various grades of bricks, Compressed mud blocks, Hollow blocks, Terracotta, Stoneware, Earthenware, Vitreous China etc.	15	1, 2, 4
3	Brick Work & Stone Work	Brick Work: Basic Terminology. Bonding: Types of bonds: English, Single and Double Flemish, Rat trap bond, Offset functions and Quoins: Right Angled and Angular Quoins, Tee and Cross junctions for various thicknesses, attached and other piers and Coping, Corbelling, String courses and Decorative brickwork, Cavity walls. Stone Work: Stone masonry - random rubble, coursed rubble and ashlar, dressing.	20	1, 3, 5
4	Timber, Bamboo and Other Natural Materials	Timber: Classification, Characteristics, defects and preservation. Carpentry Joints and Tools. Bamboo: Bamboo as plant classification, Species, Properties, Strength, Processing, Working of Bamboo tools – Treatment and preservation of Bamboo and its uses, Thatch, Coir etc.	15	2, 3
5	Timber by Products	Timber by Products: Decorative and Commercial plywood, Ply-board, block boards, Particle board, Wood wool cement board, Fiber board (MDF), Insulation board, Compressed straw board, Veneers and Laminates.	12	1, 4

Reference Books:
Building Construction of Buildings, Vol. I & II by R. Barry..
Building Materials by S. K. Duggal.,
Materials of Construction by D N Ghosh
Building Construction – Vol. I, II & III by W. B. Mackay
Building Construction by S. C. Rangwala
e-Learning Source:
https://onlinecourses.nptel.ac.in/noc23_ag03/preview
https://www.cemnet.com/training/cmt01
https://www.vedantu.com/chemistry/uses-of-limestone
https://theconstructor.org/building/lime-classification-building-construction/15745/

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	1	1	3	3	1					1	3	1	2		
CO2	3	3	3	2	1	1	2	1					2	3	1	2		
CO3	3	2	3	2	1	2	2	1					1	3	2	1		
CO4	1	2	2	2	3	3	2	1					1	3	1	2		
CO5	3	1	2	1	2	2	1	1					1	1	1	1		

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Integral University, Lucknow

Effective from session: 2025 - 2026							
Course Code	AR103	**Title of the Course**	Architectural Drawing-I	**L**	**T**	**P**	**C**
Year	I[st]	**Semester**	I	1	-	2	2
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	The course aims at developing the requisite level of proficiency in drawing, which is seen as a primary communication tool in the practice of architecture just like language. λ Students shall be familiarized with a range of techniques of expression beginning with manual drawing. λ Familiarization with drafting tools and accessories. Learning drafting, lettering and rendering techniques. λ Comprehension and visualization of geometrical forms.						

Course Outcomes	
CO1	Develop the requisite level of proficiency in drawing with primary communication tool in the practice of architecture just like language
CO2	Familiarize with a range of techniques of expression beginning with manual drawing.
CO3	Familiarize with drafting tools and accessories along with learning drafting, lettering and rendering techniques
CO4	Know about the comprehension and visualization of geometrical forms.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hours**	**Mapped CO**
1	Free Hand Drawing & Lettering	*Sheet Layout and formatting:* Drafted and freehand architectural lettering.	6	1, 3
2	Basic Technical Drawing & Scales	*Lines:* Concept and types of lines; line thickness; dimension lines etc. Division of lines, arcs and angles, drawing polygons, Determining the length of arc. *Scales:* Engineers scale, Graphical scale, and Representation factor (R.F.) Scales on drawing; Types of scales: Plane scale and Diagonal scale, etc.	12	2
3	Orthographic Projections and Metric Drawing	*Orthographic Projections:* Definition, meaning and concept; Principles and methods of projection: Orthographic projection; Planes of projection; Four Quadrants; First angle projection; Third angle projection; Projections of Point: When a point is situated in the first, second and third quadrant etc. *Metric Drawings:* Types used and advantage; Isometric, Axonometric and Oblique views, projections, and their dimensions etc.	12	2
4	Projections of Lines	*Projection:* Line parallel to one or both the planes, perpendicular to one of the planes, inclined to one plane and parallel to the other, perpendicular to both the reference planes etc.	12	1, 3
5	Development of Surfaces	*Development of Surfaces* of cubes, prisms and cylinders.	6	4

Reference Books:

Engineering Drawing by N. D. Bhatt

Design Drawing by D.K. Ching, Francis

Architectural Graphics by D.K. Ching, Francis

Fraser Reekie by Reekie's Architectural Drawing

e-Learning Resources:

http://www3.ul.ie/~rynnet/orthographic_projection_fyp/webpages/what_is_ortho.html

http://www.dtcc.edu/-document,project info - Arch.dwg.

http://www.technologystudent.com/designpro/ortho1.htm

http://www.slideshare.net/yashlakdawala7/projection-ofpointandlinesengineering108com

http://rgpv-ed.blogspot.in/2009/09/projections-of-points-lines-planes-and.html

*www.ae.iitkgp.ernet.in/~anup/05section_of_**solids**.pdf*

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
CO		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	3	2	-	-	2	3					2	3	1	1		
CO2	2	3	3	2	-	-	1	3					1	3	2	1		
CO3	3	2	3	2	-	-	2	3					2	3	2	1		
CO4	3	1	3	3	-	-	2	3					3	3	2	1		

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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR104	**Title of the Course**	Architectural Graphics	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**1**		**2**	**2**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	Understanding the essentials of art, with the aim to develop and enhance drawing skills in various aspects of art, in various mediums and techniques.						

Course Outcomes	
CO1	Demonstrate an understanding of basic art form & develop perception, the ability to think graphically and utilize drawing as a language of communication.
CO2	Learn the architectural rendering techniques for building exteriors and interiors by using pen & ink, color, values, tones, etc.
CO3	To develop a design idea into a coherent proposal and to communicate ideas and concepts through graphical representation.
CO4	Articulate an understanding of the visual impact of colors, lines, shapes and textures used in design & construct conceptual and presentation models as a design presentation tool for aesthetic exploration.
CO5	To draw inspiration and develop a sense of observation from their surroundings, society and things happening around them.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to arts	Understanding art, its meaning and scope. Relevance of art in the field of architecture. Materials used for art: pencil, brush, airbrush, rotring pens, etc. Types of colouring material: pencils colours, sketch pens, copic markers, water colour, poster colour, oil pastel, acrylic colours, chalk colours, wax crayons, alcohol inks, etc.	8	1
2	Mode of Art: Development & Enhancement of drawing skills	Freehand drawing of lines & basic geometrical shapes. Understanding types of pencils, its grading and importance of intensity. Various methods to express art with points, lines, strokes and tones. Effects of light, shades & shadows and reflections on various objects Sketching scenes from memory and observation of day-to-day life, nature, household objects, architectural accessories, and buildings. Understanding textures and their effect on an object etc. Rendering techniques in ink and colour. Effects of perspective in a drawing. Live sketching.	12	2, 3
3	Colour Theory	Colour Wheel (primary, secondary, tertiary), colour schemes, warm and cool colours, neutral colours, hue, tints, shade, tones, saturation, value, etc. Colour psychology.	10	2, 3
4	Scale & Proportions	Understanding scale and proportion. Enlargement and reduction of a drawing. Life-sized, Miniature, Oversized, Enormous Golden ratio.	10	4
5	Visual Communications	Type and quality of visual communication skills and the role of preparers, presenters and interpreters in visual communication. Exposure to visual presentation of statistical data through pie, bar, & graphs and other illustrations	8	4, 5

Reference Books:

Art in India by F. M. Asher,

Art an Introduction by D. G. Cleaver,

Rendering with Pen & Ink by R. W. Gill

Art & Techniques by L. Mumford

Mural Art in Architecture by B. S. Rawat

Our India by Masani, Minu

Our Mankind by Masani, Minu

Visual Simulation by Shepperd, R. J.Stephen

Learn Pencil shading Sketching-I, II, III by Narvekar,Subodh

Architectural Graphics Standards by Ramsey

e-Learning Resource:
https://archive.org/details/FrancisD.K.ChingArchitecturalGraphics6thEd2015
https://www.re-thinkingthefuture.com/architectural-community/a2419-10-online-courses-for-architectural-rendering/
https://www.udemy.com/course/architectural-visualization-fundamentals/
https://www.skillshare.com/en/browse/architectural-rendering

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	2	3	-	1	1	2					3	3	1	3		
CO2	2	-	3	3	-	-	2	1					2	3	1	3		
CO3	3	1	1	2	-	-	2	2					2	3	2	2		
CO4	3	2	1	3	-	1	3	2					2	3	2	3		
CO5	2	3	-	1	3	-	3	3					1	3	3	3		

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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR105	**Title of the Course**	Surveying and Levelling	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**1**	**2**	**-**	**3**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	• Familiarization with the principles and techniques of Surveying and Levelling in Architecture. • Interpretation and preparation of contour maps. • To understand the fundamental concepts and methods of surveying using basic & advanced • instruments for surveying and levelling.						

Course Outcomes	
CO1	Explain the importance and need of surveying in architecture, Types and classification of surveys, Plane and geodetic surveying.
CO2	Equipment and methods of plane tabling. The prismatic compass and its use; whole circle bearing; quadrant bearing
CO3	Different types of leveling instruments, temporary and permanent adjustments,
CO4	Characteristics of contour lines, direct and indirect methods of contouring, interpolation of contours.
CO5	Total Station and its application in surveying, Introduction to aerial survey, digital mapping, satellite Imaging, GPS and uses of GIS in plane surveying.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction	Definition, Classification, Scope and importance of surveying, Principles of Surveying, Measurement techniques, Survey on sloping ground, Obstacles, errors and mistakes in the process of survey, Scale, Signs convention.	12	1
2	Plane Table & Compass Surveying	*Plane Table Survey:* Principles and methods of the plane table survey, Accessories used, Temporary adjustments, Removal of the closing errors. *Compass Survey:* Principle of compass survey, the prismatic compass its construction & uses, Methods and temporary adjustments, System of readings, Magnetic declination, Effect of local attraction and its removal.	12	2
3	Levelling and Contouring	Object and uses of the levelling, Principle and methods of levelling, temporary adjustments, levelling staff, and reduction of levels, curvature & refraction, reciprocal levelling, profile levelling, cross sectioning. Characteristics of contours, Direct and indirect methods of contouring, Interpolation, Uses of contours and preparation of contour maps.	12	3
4	Advanced Instruments/ Technology	Total Station: Total Station and its application in surveying, accessories, adjustments, functions and uses. Advantages over traditional theodolite. Introduction to aerial survey, digital mapping, satellite Imaging, GPS, uses of GIS in plane surveying	6	4
5	Practical Layout	On site lay out a small residential unit as per map and plan.	6	5

Reference Books:

Surveying & Levelling by N. N. Basak

Surveying and Measurements by S. K. Duggal,

Surveying and Measurement by B. C. Punmia

Higher Surveying by A. M. Chandra

Plane Surveying by Alakade

e-Learning Source:

http://www.whycos.org/cms/sites/default/files/pdf/projects/Pacific/Training/Surface_Waters/Levelling_and_surveying.pdf

http://www.tcd.ie/civileng/Staff/Brian.Caulfield/3A1/3A1%20Lecture%204.pdf

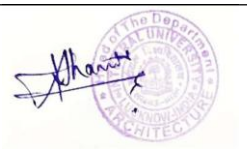
http://www.levelling.uhi.ac.uk/

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	-	3	1	2	3	2	2					3	3	2	2		
CO2	3	3	3	1	-	2	3	2					3	2	3	1		
CO3	2	3	3	1	1	2	3	2					2	3	2	2		
CO4	-	3	3	2	-	3	2	2					3	3	2	3		
CO5	3	3	3	3	2	2	1	2					3	2	2	2		

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Ar. Mohammed Fahad Khan
Name & Sign of Program Coordinator



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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR106	**Title of the Course**	Workshop Practice	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**0**	**0**	**2**	**1**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	This course is aimed at imparting basic workshop and material handling skills and techniques necessary for preparing architectural models and art project while in calculating value for good craftsmanship.						

Course Outcomes	
CO1	To work with carpentry tools and equipments to be able to cut, plane, join, and finish wooden members. Making simple joints used in buildings and furniture and its significance on site.
CO2	Simple exercises to convert metal into desired shapes and forms.
CO3	To understand the process of making building models with various materials such as card-board, wood, plastics, plaster of Paris and metals, ability to make simple joints in timber, pipes and other materials, basic electrical circuits
CO4	To familiarize with making of actual scale model from card board, wood, sun pack and general metal etc.
CO5	Ability to prepare course file for workshop activities

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	**Understanding basic skills of carpentry**	Learning to work with carpentry tools and equipment is to be able to cut, plane, join, and finish wooden members. Making simple joints used in buildings and furniture and its significance on site.	4	1
2	**Understanding basic skills of metal work**	*Fitting, welding and sheet metal shop* Learning to cut, bend, weld, solder, grind and file metals. Simple exercises involving the above to convert metal into desired shapes and forms.	4	2
3	**Model making**	To understand the process of making building models with various materials such as card-board, wood, plastics, plaster of Paris and metals, ability to make simple joints in timber, pipes and other materials, basic electrical circuits.	4	3
4	**Preparation of actual scale model**	Preparation of actual scale model	4	4
5	**Documentation**	Shop wise preparation of course file for workshop activities.	4	5

Reference Books:
Model Making by M. Werner.
Architectural Graphics. by F. D. K Ching.
Designing with models: A Studio guide to Architectural Process Models by B. M.Criss.
The Elements of Architecture by C. L. Morgan. and J. Nouvel
Lobolly House: Elements of a New Architecture by S. Kieran and J. Timberlake.
e-Learning Source:
Workshop Book: http://www.bspublications.net/downloads/05229cf9b012a3_workshop_Ch_1.pdf
Carpentry Shop: https://www.brcmcet.edu.in/downloads/files/n51e62e9ea2045.pdf
Model Making Guide: https://www.firstinarchitecture.co.uk/architectural-model-making-the-guide/

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	-	-	3	1	2	3	2	2					3	3	3	3		
CO2	-	3	3	1	-	2	3	2					3	3	2	2		
CO3	-	3	3	1	1	2	3	2					3	3	3	3		
CO4	-	3	3	2	-	3	2	2					3	3	3	3		
CO5	-	3	3	3	2	2	1	2					1	2	1	2		

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Ar. Mohammed Fahad Khan
Name & Sign of Program Coordinator

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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR107	**Title of the Course**	Computer Applications-I	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	1	2	-	2
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	• To initiate students into theory and practice of Computer Applications in Architecture. • To familiarize students with computers so as to understand the complete management outlook of an • architects' office besides architectural drawings. • To teach graphic applications specially 2 Dimensional for fast and attractive presentation of theme and ideas. • To teach utilization of knowledge of 3D modelling and its application in design.						

Course Outcomes	
CO1	How to Introduce students to initiate students into theory and practice of Computer Applications in Architecture.
CO2	How to familiarize students with computers so as to understand complete management outlook of an architects' office besides architectural drawings.
CO3	To teach graphic applications specially 2Dimensional for fast and attractive presentation of theme and ideas.
CO4	To teach utilization of knowledge of 3D modelling and its application in design.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Basic Computer Skills	Computer fundamentals; Documentation and Presentation; Introduction to MS Office: Creating Specific Documents, Viewing & Navigating, Margins & Page Setup, Page Formatting, Listing & Tables, Referencing, Mail merge, saving & printing. Worksheet and Excel table basics. File Management: Recommended softwares: Microsoft Office and open office.	10	1,2
2	Computer Aided Drafting	Introduction: Understanding drawing skills, abilities and limitations of CAD. Understanding drawing skills, abilities and limitations of CAD. Understanding details of software interface of Autodesk- AutoCAD	8	1,2,3,
3	Introduction of Workspace	Creating and opening a file. Default CAD screen setup, Toolbars. Coordinate systems: WCS & Basics of UCS. Ways of inserting a command. Learning basic drawing tools: Unit settings, Option settings, Draw & Modify toolbar. Selection methods, Ortho, Osnap, Defaults & types of commands.	10	1,2,3,
4	Modifying Commands	Editing CAD entities: Understanding CAD helpers. Creating and editing Single line & multi-line texts. Making and inserting blocks, Design centre and Dynamic blocks. Working with layers, Annotations and Utilities.	10	1,3,
5	Working with Computer Aided Design & Drafting	Hatches, regions and boundaries. Adding dimensions, Basic plotting technique. Introduction to graphical software, different advanced 2D and 3D Modelling object drawing methods, editing objects and modifying its associated properties, drafting skills	10	2,3

Reference Books:

Computer Fundamentals - Sinha, Richard

MS Office 2024 - Rutkosky, Lotia, Heathcote

MS Office 2016 - Breeden II, John

AutoCAD - Omura, George

Exploring Microsoft Office X - Breeden II, John

Adobe - Adobe Photoshop Elements

Photoshop - Romaniello, Steve

Understanding AutoCAD - Omura, George

e-Learning Source:

http://www.sin.fi.edu/-Computerdrafing

http://www.ccollege.hccs.cc.tx.us/-Comp.graphic

http://www.ciips.ee.uwa.edu.an/

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	3	1	1	1	3	3					3	3	3	3		
CO2	2	3	3	2	2	2	2	2					3	3	2	2		
CO3	3	3	3	2	1	2	2	3					3	3	3	3		
CO4	3	3	3	2	2	3	3	3					3	3	3	3		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR108	**Title of the Course**	Environmental Sciences	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	2	-	-	2
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. To familiarize students with various environmental issues and relate them in context of Architecture 2. The purpose of this subject is to introduce to the students the basics of Ecological and Environmental systems and their Importance and interdependence 3. To understand the importance of environmental systems and its relation with human development. 4. To give an overview of environmental sciences and the natural resources available for sustainable human life. 5. To understand about legal rights and produce awareness in public and private professional conducts and ethics.						

Course Outcomes	
CO1	Know the basics of Ecological and Environmental systems and their Importance and interdependence
CO2	To understand the importance of environmental systems and its relation with human development.
CO3	Know about environmental sciences and the natural resources available for sustainable human life.
CO4	To know about legal rights and produces awareness in public and private professional conducts and ethics.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction	The Multidisciplinary nature of Environmental Studies Definition, Scope and importance, need for public awareness. **Natural Resources** Renewable and non-renewable resources Natural Resources and associated problems: • Forest resources and over exploitation, deforestation, case studies. Timber extractions, mining, dams and their effects on forests and tribal people. • Water resources: Uses and over utilization of surface and ground water, floods, drought, conflicts over water, dams- benefits and problems. • Mineral resources: Uses and over exploitation, environmental effects of extracting and using mineral resources, case studies. • Food resources: World food problem, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizer pesticide problems, water logging, salinity, case studies. • Energy resources: Growing energy needs, renewable energy sources, use of alternate energy sources. Case studies. • Land resources: Land as resource, land degradation, man induced landslides, soil erosion and desertification. a) Role of an individual in conservation of natural resources. b) Equitable use of resources for sustainable lifestyles.	8	1,2,3
2	Ecosystems	Concept of an ecosystem • Structure and function of an ecosystem • Producers, consumers and decomposers • Energy flow in the ecosystem • Ecological succession • Food chains, food webs and ecological pyramids • Introduction, types, characteristics, features, structure and function of the following ecosystem: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (Ponds, streams, lakes, rivers, oceans, estuaries)	4	1, 2,3,
3	Biodiversity and Its Conservation	Introduction Definition: genetic, species and ecosystem diversity, Biogeographical classification of India, Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at Global, National and Local levels, India as a mega diversity nation, hot spots of biodiversity, threats to biodiversity, habitat loss, poaching of wild life, man wild life conflicts, endangered and endemic species of India, conservation of Biodiversity: In situ and Ex situ conservation of biodiversity.	8	1,2,4

4	Environmental Pollution	Definition, Causes, effects and control measures of Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution and Nuclear Hazards. Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution Case Studies. Disaster management: floods, earthquake, cyclone and landslides.	6	1,3,4
5	Social Issues, Population and The Environment Social Issues and The Environment	From unsustainable to sustainable development, urban problems related to energy, water conservation, rain water harvesting, water shed management, resettlement and rehabilitation of people; its problems and concerns, case studies, environmental ethics; issues and possible solutions, wasteland reclamation, consumerism and waste products, Environmental Protection Act, Air (prevention and control of pollution) Act, Water (prevention and control of pollution) Act, Wild Life Protection Act, Forest Conservation Act, issues involved in enforcement of environmental legislation, Public awareness. Human Population and the Environment Population growth variation among nations, population explosion, family welfare programme, environment and human health, human rights, value education, HIV/AIDS, women and child welfare, role of information technology in the environment and human health, case studies.	6	2,3,5

Reference Books:

Computer Fundamentals by Sinha, Richard

Environmental Chemistry by A. K. De.

Environmental protection and laws by H. Jadhave,V.M. Bhosale

Elements of Environmental Engineering by K. M. Duggal

Environmental Science by V. K. Ahluwalia

Environmental Engineering by Sincer, P. Arcadio.

A Text book on Environmental Pollution and Control by D. S. Bhatra.

Energy Environment and Sustainable Development by Pradeep Chaturvedi

Energy Technologies for Sustainable Development By Dr. Upendra Pandel

Environmental Impact Assessment of Water Resources Project by C Umesh Chaube

Environmental Legislation; Code no 727: AICTE

e-Learning Source:

http://pubs.rsc.org/en/journals/journalissues/ee#!recentarticles&all

www.sustainable.org/environment

https://www.worldwildlife.org/threats/pollution

home.southernct.edu/~gravess1/scsu_courses/.../env301-chapt12.ppt

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	-	3	-	-	2	3					2	3	2	2		
CO2	3	-	-	3	-	-	2	3					2	3	1	3		
CO3	3	1	-	2	3	-	3	2					1	3	2	1		
CO4	3	1	-	2	3	-	3	2					1	3	2	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan
Name & Sign of Program Coordinator

Sign & Seal of HoD

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR109	**Title of the Course**	Architectural Design-II	**L**	**T**	**P**	**C**
Year	I	**Semester**	II	3	0	6	12
Pre-Requisite	AR101	**Co-requisite**	Nil				
Course Objectives	1. To introduce architectural design as a process and as a final product; to understand fundamentals of space, form and order in architecture. 2. Understanding design as function. 3. To involve students in a design project that will develop their understanding of simple space planning and functional aspects of good design; to enable the students apply theoretical knowledge learnt in the previous semester in architectural design exercise. 4. Indoor space, outdoor space, the concept of space in buildings. The relationship between man and space. Defining spaces and the degree of enclosure. Organization of spaces, fenestration, and character of facade, enclosure and internal spaces. 5. Quality and hierarchy of space (private/semi-private/public/semi-public).						

Course Outcomes	
CO1	Understand architectural design as a process and as a final product and the fundamentals of space, form and order in architecture.
CO2	Understand the design as function.
CO3	Develop their understanding of simple space planning and functional aspects of good design and theoretical knowledge.
CO4	Know about the Indoor space, outdoor space, the concept of space in buildings and the relationship between man and space, defining spaces and the degree of enclosure, Organization of spaces, fenestration and character of facade, enclosure and internal spaces.
C05	To make student understand and develop the quality and hierarchy of space (private/semi-private/public/semi-public).

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Unit-I	**To develop understanding of single unit design with respect to human scale, requirement and need.**	48	1
		Application of anthropometrics in different spaces. Suggested Exercises Designing of several indoor space such as Bathroom, Kitchen, Bedroom, Dining, Living, etc.	24	1 & 3
3	Unit-II	**Understanding design synthesis of multi-functional spaces in a single space.** Suggested Exercises Design exercises such as Gates, kiosks, bookstall, bus stand, police booths, milk booths, advertisement booths, florist shops, tea stall, shelter in park, etc. Designing for basic functions of human beings, eg. living, eating, sleeping, cooking etc.	30	3
4	Unit-III	**TIME PROBLEM** a) Design of any small scale shall be carried out in design week from introduction to final Submission b) Design week problem should be introduced on Saturday/ two days before the commencement of the design week for enabling the students to collect literature and relevant data for the exercise. c) The problem introduced in design week to be judged by external experts.	42	1, 2, 3, 4 & 5

Reference Books:

Architecture: Form, Space and Order, 3rd Ed. Hoboken: John Wiley & Sons by F.D.K. Ching.

Understanding Architecture: Its Experience History and Meaning, 3rd Ed. Philadelphia: West-view press. by L.M. Roth,

The dynamics of architectural form. Berkeley and Los Angeles: University of California Press. by A. Rudolf

The Theory of Architecture–Concepts themes and Practices by A. J. Paul .

Elements of Space making. by Pandya, Y. 96

Elements of architecture – from form to place. 1st Ed. New York: Routledge. by V. M. Peter.

Analyzing Architecture by S. Unwin

Measured Drawings by Shing,Patrick LAU Sau

e-Learning Source:

https://sdgs.un.org/goals

https://www.who.int/health-topics/air-pollution

https://www.conserve-energy-future.com/causes-effects-solutions-depletion-natural-resources.php#:~:text=Resource%20depletion%20happens%20when%20the,fishing%2C%20mining%2C%20logging%20etc.

https://www.sciencedirect.com/science/article/abs/pii/S0360544220305168

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO6	PSO7
CO1	3	1	-	3	-	-	2	3					2	3	1	1		
CO2	3	-	-	3	-	-	2	3					2	1	3	2		
CO3	3	1	-	2	1	-	3	2					3	1	2	3		
CO4	3	1	-	2	3	-	3	2					3	1	1	1		
CO5	3	1	-	3	2	-	2	3					2	3	3	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR110	**Title of the Course**	Building Construction and Materials-II	**L**	**T**	**P**	**C**
Year	I	**Semester**	II	**2**	**2**	**2**	**6**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. To develop understanding about building elements and their construction principles 2. To develop understanding about composition of various compatible building materials for construction. 3. The subjects should also focus on developing design abilities by applying basic principles of construction and choosing appropriate materials and techniques as per market trends.						

Course Outcomes	
CO1	Know about building elements and their construction principles.
CO2	Understand the composition of various compatible building materials for construction.
CO3	Understand the design abilities by applying basic principles of construction and choosing appropriate materials and techniques as per current market trends.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to basic building elements	Foundation, Plinth, walls, Sills, Chhajjas, Portico, Piers, Roof, Parapet, Coping, Corbelling, Cornices, Staircases etc. Sheet work of Typical Brick Wall Section from Foundation to Roof including all basic building elements.	18	1
2	Foundation & Damp-Proof Course	Need for foundations, types, preliminary design criteria, Foundation in brickwork and concrete, Detail of spread foundation for load bearing walls of various thicknesses, Types and basic details of various concrete footings. DPC: Water-proofing and damp proofing for walls, roofs, basements, retaining walls etc.; Study of waterproofing materials like Asphalt, bitumen and synthetic, new, materials in the market. Sheet work on laying of horizontal and vertical damp proof courses.	20	2
3	Arches	Elementary principles of arch construction. Definition of various technical terms and types of arches. Sheet work on brick arches. Round Arch, Segmental Arch, Flat Arch, Triangular Arch, Moorish Arch, Cusped Arch, Trefoil Arch, Lancet Arch, Tudor Arch, Inflexed Arch etc.	18	3
4	Glass, paints and varnishes	Glass: Ingredients and manufacture of Glass, forms, properties of Glass for building purposes and structural uses, glass processing- Sheet, Float, Plate and Toughened. Paints and Varnishes: Type of Paints and Varnishes, Characteristics, variety in their application and appropriateness in building works.	20	3
5	Introduction to advanced building materials	Introduction to advanced Building Materials as per latest available resource and market trend. For Example: Transparent Wood, Carbon Fiber, Sensi tiles, Self-healing Concrete, Flexible Concrete, Light generating Concrete, Aerogel, Bioplastic, Liquid Granite, Transparent Aluminium, Bio-Coal Lining, Nano materials etc.	20	3

Reference Books:
Building Construction of Buildings, Vol. I & II by R. Barry
Building Materials by S. K. Duggal
Materials of Construction by D. N. Ghosh.
Building Construction – Vol. I , II & III by W. B. Mackay,
Building Construction by S. C. Rangwala
e-Learning Source:
https://civiljungle.com/difference-between-mortar-and-concrete/
https://www.civillead.com/difference-between-mortar-and-concrete/
https://dreamcivil.com/dpc-treatment-in-buildings/
https://www.engineeringcivil.com/advanced-construction-techniques.html

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	2	3	2	-	-	3	2					3	3	2	3		
CO2	-	1	3	3	-	-	3	2					3	2	1	2		
CO3	3	2	3	2	2	1	3	3					3	3	2	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR111	**Title of the Course**	Architectural Drawing and Graphics-I	**L**	**T**	**P**	**C**
Year	I	**Semester**	II	1	0	2	2
Pre-Requisite	AR103	**Co-requisite**	Nil				
Course Objectives	1. The course aims at developing the requisite level of proficiency in drawing, which is seen as a communication tool in the practice of architecture just like language. 2. Students shall be familiarized with a range of techniques of expression beginning with manual drawing. 3. Learning drafting, lettering and rendering techniques. 4. Visualization of geometrical forms.						

Course Outcomes	
CO1	Efficient in drawing, which is seen as a communication tool in the practice of architecture just like language.
CO2	Familiarize with a range of techniques of expression beginning with manual drawing.
CO3	Learn drafting, lettering and rendering techniques.
CO4	Visualize of geometrical forms.
CO5	Develop appropriate graphic skills and technical drawings which is helpful to explain the contents of a design.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Projection of Planes and Solids	Perpendicular to both the reference planes, Perpendicular to one plane and parallel to the other plane, Perpendicular to one plane and inclined to the other, Projections of planes inclined to one reference plane and perpendicular to the other, etc. Axis parallel to both, H.P. & V.P.; Axis inclined to one reference plane and parallel to other;	9	2, 4
2	Section of Solids	Section planes, true shape of a section. Section of solids (prisms, pyramids, cylinders, cones)	9	2, 4
3	Drawing Skills	Organizing and creating backgrounds for an architectural drawing: criterion for selection of medium and modes of presentation such as: function differentiation, cone of vision, floor-scape and landscape. Drawing and rendering of natural elements and their incorporation in architectural drawings, such as: trees, plants, creepers, rockery, water bodies, pathways, sky, water and reflection in water. Drawing human figures in various forms and postures.	9	1, 3
4	Solid Geometry	Construction of section, Intersection and Interpenetration of solid	9	4
5	Rendering and Sciography	Introduction/ meaning of Sciography Projection of Sciography in plans and elevations. Rendering with different techniques: dry brush, airbrush, spray brush, line-stroke, cut-paste, etc. Rendering in different mediums: oil pastels, pastels, water colours, poster colours, charcoal, pencil colours, etc. Expressing designs from conceptual to planning stage in the form of 2-dimensional and 3- dimensional sketches.	12	3, 5

Reference Books:
Engineering Drawing by N.D. Bhatt
Design Drawing by D. K. Ching, Francis
Architectural Graphics by D. K. Ching, Francis
Rendering with Pen & Ink by W. Robert Gill
Architectural Drawing by Reekie, Fraser, Reekie's
Architectural Graphics Standards by Ramsey
e-Learning Source:
http://www.dtcc.edu/-document,project info - Arch.dwg.
http://www3.ul.ie/~rynnet/orthographic_projection_fyp/webpages/what_is_ortho.html
www.ae.iitkgp.ernet.in/~anup/05section_of_**solids**.pdf

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	3	3	2	-	1	2	2					3	3	3	3		
CO2	2	3	3	3	-	1	1	2					3	2	3	2		
CO3	1	2	2	3	-	1	1	3					3	3	2	3		
CO4	3	3	3	3	2	2	2	3					3	3	2	2		
CO5	2	2	1	3	-	1	1	3					2	2	3	3		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR112	**Title of the Course**	Visual Communication	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	II	**1**	-	**2**	3
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. Understanding the essentials of art. 2. To develop and enhance drawing skills in various aspects of art, in various mediums and techniques. 3. Understanding the need and objectives of presentation of visual environment. 4. Developing an aptitude towards architectural and environmental assessment. 5. Learning visual presentation of statistical data. 6. Introduction to elementary Visual Communication Skills, such as, communication graphics (sketches, renderings, perspectives, architectural illustrations), scale models, photographs.						

Course Outcomes	
CO1	Understand the essentials of art.
CO2	Study and find better drawing skills in various aspects of art, in various mediums and techniques.
CO3	Aptitude towards architectural and environmental assessment.
CO4	Learning visual presentation of statistical data
CO5	Elementary Visual Communication Skills, such as, communication graphics (sketches, renderings, perspectives, architectural illustrations), scale models, photographs

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction	Need for and the importance of human and visual communication, communication as an expression, skill and process, Non-verbal communication Communication as a process: Message, Meaning, Connotation, Denotation Culture/Codes etc. Levels of Communication: Technical, Semantic and Pragmatic. The Semiotic landscape: Language and visual communication, narrative representation	12	1, 2, 3 & 4
2	Developing an aptitude towards architectural environment assessment and learning visual presentation of statistical data	Introduction to elements, principles and techniques of experiencing architecture. Studying and assessing live and proposed projects. Exposure of students to famous places and buildings of architectural interest during educational tours. Exposure to visual presentation of statistical data through pie, bar, & graphs and other illustrations.	10	3, 4 & 5
3	Learning visual presentation of statistical data	Exposure to visual presentation of statistical data through pie, bar, & graphs and other illustrations	10	1, 4 & 5
4	Introduction to elementary visual communication skills such as communication graphics (sketches, renderings, architectural illustrations) and scale models	Exposure of students to good drawing, rendering, model making materials and techniques. Encouraging students to take up sketching, painting etc. as a hobby.	8	2,4 & 5
5	Introduction to photography, computer-aided design/drafting (cadd) graphics, video image processing and video simulation as tool of pictorial presentation	Exposure of students to good architectural illustrations, perspectives, photographs and CADD graphics. Encouraging students to take up photography as a hobby.	8	3,4 & 5

Reference Books

Art an Introduction by D. G. Cleaver

Art in India By F. M. Asher
Rendering with Pen & Ink By . W. Gill
Art & Techniques By L. Mumford
Mural Art in Architecture, Visual Design in Islamic Architecture by B. S. Rawat
Our India with 100 illustrations by Minu Masani
Our Mankind by Minu Masani
Visual Simulation by Shepperd, R. J.Stephen
e-Learning Source:
http://www.sin.fi.edu/-Computerdrafing
http://www.ccollege.hccs.cc.tx.us/-Comp.graphic
http://www.ciips.ee.uwa.edu.an/

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	1		2	3	3	3	1					1	2	1	2		
CO2	2	3	3	3	2	2	1	3					1	2	2	2		
CO3	3	2	3	2	2	2	1	1					2	3	2	1		
CO4	2		2	2		2	2	2					3	3	2	2		
CO5	2	2	3	2	1	2	2	1					2	3	3	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR113	**Title of the Course**	ARCHITECTURAL STRUCTURES - I	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	II	**2**	**0**	**0**	**2**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. To understand the basic principles of structural mechanics, so that it can help in building a strong basis to understand study of structural design. 2. Developing in students, material skills to analyze and understand fundamentals and working of various parts of different structural systems.						

Course Outcomes	
CO1	Theory of structures for architects. Technical names and functions of various structural components from foundation to roof. Fundamentals of mechanics.
CO2	Types of Loads - Dead Load, Live Load, Impact Load, Earthquake Load, Wind Load and Snow Load. Mechanical properties of different materials such as tensile strength, fatigue strength and comprehensive strength.
CO3	Definition, Cause, Effect, Units, Force as vector, Graphical representation. Resolution of forces by graphical and analytical methods. Types of forces – Co planar, Non-Co planar, Concurrent, Non-Concurrent, and parallel forces.
CO4	Elasticity, stress, strain, types of stresses, elastic limit, Hook's law, modulus of elasticity, stresses in composite bars, linear strain, Poison's ratio, shear stress, principal stresses and strains.
CO5	Definition, centre of gravity of plane figures, centre of parallel forces. Definition, important theorems, section modulus, calculation of moment of inertia by first principle and its application, moment of inertia of composite sections.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction	Aims, objectives and scope of study of Theory of structures for architects. Technical names and functions of various structural components from foundation to roof. S.I. system Units. Fundamentals of mechanics: Force, Law of parallelogram of forces, Law of triangle of forces, Polygon Law of forces, Resolution of forces. Resultant of number of concurrent coplanar forces. Condition of equilibrium, Moment of force, Moment and arm of couple, Theorems on couples.	8	1
2	Loads and mechanical properties of materials	Types of Loads - Dead Load, Live Load, Impact Load, Earthquake Load, Wind Load and Snow Load. Mechanical properties of different materials such as tensile strength, fatigue strength and compressive strength.	8	2
3	Simple stresses and strains	Elasticity, stress, strain, types of stresses, elastic limit, Hook's law, modulus of elasticity, Modulus of rigidity, Bulk modulus, stresses in composite bars, linear strain, Modular ratio. Poison's ratio, shear stress, principal stresses and strains, Mohr's circle.	8	3
4	Centre of Gravity and Moment of Inertia	Definition, centre of gravity of plane figures, centre of parallel forces. Definition, important theorems, section modulus, calculation of moment of inertia by first principle and its application, mom0065nt of inertia of composite sections.	4	4
5	Shear Force and Bending Moments	Beams shearing force and bending moment, Shear force and Bending moment diagrams for cantilever and simply supported beam, and overhanging beam. Stresses in Beams: Simple beams bending, Section modulus, Moment of resistance, Shear stress in section of beam.	4	5

Reference Books:
Elements of Structural Analysis by S. A. Bari
Structure and Architecture by A. J. Macdonald
Strength of Materials by R. K. Rajput
Introduction to Structural Analysis by B. D. Nautiyal
e-Learning Source:
www.brown.edu/Departments/Engineering/Courses/En4/.../Forces.pdf
http://web.mit.edu/4.441/1_lectures/1_lecture5/1_lecture5.html
my.safaribooksonline.com/...simple-stresses-and-strains/chapter001_xht..
fetweb.ju.edu.jo/staff/che/ymubarak/Strength-lectures/chapter1.pdf
https://sites.google.com/site/mechanicalstuff4u/contents-of-m/engineering-mechanics-4/centre-of-gravity-moment-of-inertia
http://johnarner.com/apphysics/week21/lesson21.html
http://www.urminsky.ca/wp-content/CP12011/chapter7part2Post4up.pdf

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	-	2	3	2	-	3	2	1					2	3	1	2		
CO2	-	2	3	2	-	3	2	1					2	2	2	2		
CO3	-	2	3	2	-	3	2	1					3	3	3	3		
CO4	-	3	3	2	-	3	3	2					2	3	3	1		
CO5	-	2	3	2	-	3	2	1					3	2	2	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Ar. Mohammed Fahad Khan **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR114	**Title of the Course**	Site Exposure and Construction Yard	**L**	**T**	**P**	**C**
Year	1st	**Semester**	II	-	**2**	-	**1**
Pre-Requisite	AR102	**Co-requisite**	AR110				
Course Objectives	1. To develop understanding of basic building elements/ components; hands on experience about working tools, their application and site safety measures. 2. To familiarize and hand experience to the students with the construction method and techniques adopted for various stages of project execution on site. 3. To understand the actual drawing requirement and the various aspects of drawing and site coordination required on site during the execution of a project.						

Course Outcomes	
CO1	Have ability to prepare different types of products from clay and also prepare different grades of cement mortar. Gaining skills to prepare different kind of brick bonds at construction yard practically.
CO2	Develop ability to prepare arches in the construction yard.
CO3	Develop an ability to prepare some useful product from metal and wood in the studio.
CO4	Have ability to prepare a scale model using wood, metal, paper or clay etc.
CO5	Developing ability to prepare proper documentation of site visits as a portfolio.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	CLAY PRODUCTS	Clay products: Preparation of clay and making some clay product. Cement: Preparation of various kind of mortar, Making and testing of concrete cubes made of various grade of cement. Trenching, shoring and laying of foundation courses for various wall thicknesses. Brick bonds (multiple wall thicknesses): English Bond, Flemish Bond, Rat Trap Bond, Decorative Bonding, Brick grills, Cavity wall, etc. Laying of damp-proof course over the wall, use of various other waterproofing materials.	8	CO1
2	ARCHES, VAULTS AND DOMES	*Arches:* Triangular Arch, Round Arch, Segmental Arch, Lancet Arch, Equilateral Arch, Camber Arch, Trefoil Arch, Horseshoe Arch, Three-centered Arch, Four-Centered Arch, Ogee Arch, Parabolic Arch, etc. *Vaults:* Barrel Vault, Cloister Vault, Corbel Vault, Rib Vault, Groin Vault and Fan Vault, etc. *Domes:* Corbel Dome, Cross-Arch Dome, Geodesic Dome, Monolithic Dome, Onion Dome, Oval Dome, Rotational Dome, Saucer Dome, Umbrella Dome, Inflated Dome, etc.	8	CO2
3	WOOD AND METAL WORK	Making, fixing, painting, washing of wooden & metal elements e.g. Door frames, door panels, parapet, railings etc.	8	CO3
4	MODEL MAKING	Making of some innovative structural shed made of bamboo or other natural materials studied before.	4	CO4
5	SITE EXPOSURE	Relevant site visit (s) and their documentation techniques.	4	CO5

Reference Books:

Materials and Construction by James a Pratt

Brickwork bonds by Menyashev Ramil

e-Learning Source:

https://architizer.com/blog/practice/details/technical-details-brick-bonds-and-patterns/

http://www.tcd.ie/civileng/Staff/Brian.Caulfield/3A1/3A1%20Lecture%204.pdf

https://testbook.com/question-answer/a-type-of-bond-in-a-brick-masonry-in-which-each-co--60d594ed7766863649c96432

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	3	3	2	3	3	3	2					1	1	1	1		
CO2	2	2	2	2	2	2	2	2					2	2	2	2		
CO3	3	3	3	3	3	3	3	3					3	3	3	3		
CO4	1	1	1	1	1	1	1	1					1	1	1	1		
CO5	2	2	2	2	2	2	2	2					3	2	3	3		

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR115	**Title of the Course**	Computer Applications-II	**L**	**T**	**P**	**C**
Year	I	**Semester**	II	1	2	-	2
Pre-Requisite	AR107	**Co-requisite**	Nil				
Course Objectives	1. To initiate students into theory and practice of Computer Applications in Architecture. 2. Advanced learning of software available for architectural applications 3. To familiarize the students with the concepts of 3D modelling. 4. To enable them to experiment with forms, mapping, rendering and presentation techniques. 5. To make students create integrated design documents by taking full advantage of the building model. 6. Integration of practical exercises along with the design studio project.						

Course Outcomes	
CO1	How to Introduce students to initiate students into theory and practice of Computer Applications in Architecture
CO2	How to familiarize Advanced learning of software available for architectural applications and familiarize the students with the concepts of 3D modelling.
CO3	To enable them to experiment with forms, mapping, rendering and presentation techniques.
CO4	To make students create integrated design documents by taking full advantage of the building model. Integration of practical exercises along with the design studio projects.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Advanced Computer Aided 2D and 3D Drafting	Texts; dimensioning Drawing unit association; scaling; associating limits; organizing drawings in custom layouts, templates. Recommended Softwares: Google Sketchup, AutoCAD.	8	1,2,3,4
2	Specific Commands & Plugins	Concept of blocks and object grouping; styles; organizing objects in layers; hatching techniques; introduction to symbol libraries.	6	1, 2,3,
3	Basic Digital Modelling	Understanding complex commands like P-line, Spline, x-refs, Express tools, Attributes, Model space & Paper space etc. At least one working plan, elevation and section should be completed.	6	1,2,3,
4	Modelling Principals	Introduction to modelling terminology and concepts. Introduction to tools and concepts necessary to design and draw. Learning solid and hollow massing, Camera position and Animation.	6	2,3,4
5	Practical Work	Creating 3D models with a metric unit system. Understanding extension manager, plugins to work with virtual building models. Understanding import Drawings. Digitized design projects.	6	2,3,4

Reference Books:

Understanding AutoCAD – George Omura

AutoCAD command reference - George Omura

Google Sketchup - Chris Grover

Google Sketchup - Errin Esquerre

e-Learning Source:

http://www.focusnet.co.uk/cib/library/physdishous

http://www.ourvirtualmall.com/cloth.htm

http://www.ddimagazine.com/

http://www.atlasmagazine.com/photo/lande6/

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO7
CO1	3	3	3	1	1	1	3	3					1	3	3	2		
CO2	3	3	3	2	2	2	3	3					2	3	1	2		
CO3	3	3	3	2	1	2	2	3					1	3	2	3		
CO4	3	3	3	2	2	3	3	3					2	3	2	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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Effective from Session: 2025 - 2026							
Course Code	AR116	**Title of the Course**	History of Architecture, Art & Culture-I	**L**	**T**	**P**	**C**
Year	1st	**Semester**	II	2	-	-	02
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. Familiarization with parameters responsible for evolution of human civilization and human settlements with a view to have a better understanding of the history of architecture at later stages. 2. Introduction to the architecture of the ancient world and understanding architecture of periods in terms of space, form and structure. 3. To generate an understanding about the development of civilization and its architectural implications.						

Course Outcomes	
CO1	Understand evolution of human civilization and human settlements.
CO2	Understand the influence of geographical location, socio-cultural, religious, political systems, people's beliefs, climate and other factors on architecture
CO3	Know about the development of civilization, its architectural implications in terms of time, space, form and structure
CO4	Develop an outlook on settlement patterns of ancient civilization and comparing same in modern societies
CO5	Identify problems related to settlements and thereby understand how to solve it

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**PREHISTORIC / PRIMITIVE ARCHITECTURE**	Primitive people, shelters, settlements, burial systems, megaliths and memorials. Eg: Oval huts near Nice, Dolmen tomb, Gallery grave, Passage grave, Cairns, Tumulus, Houses at Catal Huyuk, Stonehenge etc.	04	1
2	**NILE VALLEY CIVILISATION**	Study of socio-cultural, religious and political systems, people's beliefs, climate and other factors influencing Architecture, character of human settlements, typology of Shelters and buildings. Monumentality Tomb architecture: evolution of the pyramid from the Mastaba – Great Pyramid of Cheops, Gizeh etc. Temple architecture: mortuary temples and cult temples - Temple of Ammon Ra, Karnak, Khons - Temple of Abu Simbel (Rock Cut) etc.	06	2
3	**INDUS VALLEY CIVILISATION**	Contributions of Archaeologists, Timeline, socio-cultural, religious and political systems, settlement planning pattern, typology of Shelters and civic buildings, Citadel, Granary, Great baths, civic utility systems.	10	3
4	**ARYAN / VEDIC CIVILISATION**	Timeline with reference to Indus Valley Civilisation, settlement planning pattern and Town forms by planning pattern (Dandaka, Nandyavartha etc.), typical Vedic village, and shelter types by shape and material used, Torana and Sacred railings.	06	3 & 4
5	**MESOPOTAMIAN CIVILISATIONS**	Urbanization in the fertile crescent - Sumerian, Babylonian, Assyrian and Persian culture, Evolution of city-states and their character, law and writing, theocracy and architecture - Ninveh, Khorsahbad, Marie, Babylon etc. Evolution of the ziggurat - Ziggurat of Ur, Urnamu etc., Evolution of the palaces - Palace of Sargon, Khorsabad - Palace at Persepolis.	06	5

Reference Books:

Sir Banister Fletcher, A History of Architecture, University of London, The AntholonePress, 1996.

Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford UniversityPress, London, 1985.

Leland M Roth; Understanding Architecture: Its elements, history and meaning; CraftsmanHouse; 1994

Pier Luigi Nervi, General Editor - History of World Architecture - Series, Harry N.Abrams,

Inc.Pub., New York, 1972.

S.Lloyd and H.W.Muller, History of World Architecture - Series, Faber and Faber Ltd.

e-Learning Source:

http://www.nios.ac.in/media/documents/316courseE/ch29.pdf

http://prezi.com/ifubcui3ikau/development-of-indian-civilization/

http://www.vernaculararchitecture.com/

http://education.nationalgeographic.com/education/standards/national-geography-standards/12/?ar_a=1

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1				2	1	1	3						**3**	**2**	**2**	**3**		
CO2				1	2	2	3						**2**	**1**	**3**	**3**		
CO3	3		2	3			2	1					**3**	**2**	**3**	**2**		
CO4	3	2		2			3	1					**3**	**2**	**2**	**2**		
CO5		3	2	2		1	2	3					**2**	**1**	**2**	**1**		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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Integral University, Lucknow

Effective from Session: 2025 - 2026							
Course Code	AR117	**Title of the Course**	**Educational Tour and Documentation**	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	II	**-**	**-**	**-**	**1**
Pre-Requisite	Nil	**Co-requisite**	Nil				
Course Objectives	1. To develop understanding and get students familiarized about the well-known places, buildings, and architects work in India. 2. To introduce and get students familiarized about the usages and application of various architectural principles over the design environment. 3. To introduce the measuring technique of any site/ building etc and get it drafted on a sheet. 4. To develop the skill of visualization or transferring the visual image in to the sketches on sheets.						

Course Outcomes	
CO1	Student familiarize about the well-known places, buildings, and architects work in India
CO2	Understand about the usage of various architectural principles over the design, environment.
CO3	Understand about the application of various architectural principles over the design, environment.
CO4	Learn and knows the measuring technique of any site/ building etc and get it drafted on sheet
CO5	Developed the skill of visualization or transferring the visual image in to the sketches on sheets.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	***Suggestive places to visit***	Places to visit in this tour will be decided by a committee chair by HoD; and members as tour coordinator, course coordinator, design teachers etc. The destination will be in complete compliance with the prescribed syllabus of design, history, vernacular, settlement pattern etc. Visual- Photographs/ sketches to reinforce the objectivity of the syllabus. Documentation and presentation of complete tour work consisting of measure drawing work **An abroad tour could be arranged depending on the student willingness with proper consent from their parents/ guardians.**	-	1,2,3,4,5

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	2	3	2	1	2	2	1					2	1	2	2		
CO2	1	2	3	2	1	2	3	2					2	3	2	1		
CO3	1	3	3	2	1	2	3	2					3	2	2	3		
CO4	3	3	2	1	1	2	2	1					2	3	1	2		
CO5	3	3	2	1	2	2	2	3					1	2	3	2		

1- **Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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