



Gyanmanjari
Innovative University

Syllabus
Gyanmanjari Institute of Design
Semester-1 (CACD&DM)

Subject: Visual Representation - DET2CD11204

Type of Course: Engineering Science

Prerequisite: No prior knowledge of drawing, sketching, or visual communication is required.

Rationale: This course introduces visual representation as the foundational language bridging engineering principles and interdisciplinary design. It empowers students to translate abstract concepts into tangible visual formats through geometric analysis, structural drafting, and the study of material physics. By bridging spatial environments and material culture, the curriculum focuses on visual storytelling where true design emerges through the seamless integration of structural engineering purpose and refined aesthetics. It cultivates the critical observation, conceptual rendering, and analytical skills essential for professional, human-centric problem-solving.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks		Total Marks
CI	T	P		SEE	CCE	
0	2	4	4	100	50	150

Legends: CI - Classroom Instructions; T - Tutorial; P - Practical; C - Credit; SEE - Semester End Evaluation; CCE - Continuous and Comprehensive Evaluation



Course Content:

Sr. No.	Course content	Hrs.	% Weightage								
1	<u>Theory:</u> Fundamentals of Visual Representation Visual language and visual communication. Elements of design including line, shape, form, texture, space and value. Principles of design including balance, rhythm, emphasis, proportion, harmony, contrast and unity. Positive and negative space. Visual hierarchy and composition. Translation of visual perception into 2D and 3D forms. Introduction to visual abstraction, observation and conceptual representation. <u>Practical:</u> 1) Execute abstract line, shape and form exercises focusing on control, variation and visual expression. 2) Develop composition studies using balance, rhythm, emphasis, proportion, contrast and harmony. 3) Create positive and negative space compositions using abstract forms. 4) Develop tonal value studies using light, mid-tone and dark values. 5) Develop 2D to 3D transformation exercises using basic geometric forms. 6) Maintain a visual-memory journal documenting everyday observations through quick sketches and simplified forms. <u>Evaluation Method:</u> <table> <tr> <th>Sr. No.</th><th>Evaluation Methods</th><th>SEE</th><th>CCE</th></tr> <tr> <td>1</td><td> Visual Language and Composition Assessment Students shall complete a practical assessment demonstrating their understanding and application of fundamental visual elements and principles. The assessment shall include line, shape, form, texture, value, positive and negative space, composition and visual </td><td>20</td><td></td></tr> </table>	Sr. No.	Evaluation Methods	SEE	CCE	1	Visual Language and Composition Assessment Students shall complete a practical assessment demonstrating their understanding and application of fundamental visual elements and principles. The assessment shall include line, shape, form, texture, value, positive and negative space, composition and visual	20		22	20%
Sr. No.	Evaluation Methods	SEE	CCE								
1	Visual Language and Composition Assessment Students shall complete a practical assessment demonstrating their understanding and application of fundamental visual elements and principles. The assessment shall include line, shape, form, texture, value, positive and negative space, composition and visual	20									



	organization. Evaluation shall focus on observation, drawing fundamentals, application of design principles, creativity, composition and presentation quality.				
2	Visual Observation and Process Documentation Students shall continuously document visual observations through a visual-memory journal, sketchbook and contextual studies. The assessment shall consider observation skills, consistency, experimentation, development of ideas and quality of process documentation.		10		
Total		20	10		
<u>Examination Style:</u> Visual Language and Composition (20 Marks) Students shall create a practical composition demonstrating the application of line, shape, form, texture, value, positive and negative space and fundamental principles of design. The examination shall assess visual understanding, composition, creative exploration, application of design principles and presentation quality. Visual Observation and Process Documentation (10 Marks) Students shall maintain a visual-memory journal and process documentation containing contextual observations, abstract studies, composition exercises and visual explorations completed during the semester. The submitted work shall be evaluated for observation, consistency, experimentation, development and visual communication.					
2	<u>Theory:</u> Observation Drawing and Sketching Principles of observation drawing and visual analysis. Contour drawing, gesture drawing and continuous line techniques. Proportion, scale and human-scale relationships. Observation of		22	20%	



organic and geometric forms. Structural analysis of everyday objects and environments. Tonal values, light and shadow. Texture observation and translation. Introduction to biomimetic observation.

Practical:

- 7) Execute contour, gesture and continuous-line drawing exercises.
- 8) Develop blind-contour and rapid observation sketches from everyday objects.
- 9) Analyze and sketch organic forms using simplified geometric construction.
- 10) Conduct biomimetic form-extraction exercises from natural objects and structures.
- 11) Develop observation studies of objects showing proportion, scale, light and shadow.
- 12) Prepare texture studies of natural and man-made surfaces.
- 13) Maintain a visual documentation diary of contextual objects, spatial interventions and environmental observations.

Evaluation Method:

Sr. No.	Evaluation Methods	SEE	CCE
1	Contextual Observation Drawing Students shall create observation drawings from contextual objects, organic forms or engineered structures using proportion, contour, construction, tonal values, light and shadow and texture representation. The assessment shall evaluate observation accuracy, drawing fundamentals, structural understanding, tonal control and visual presentation.	20	
2	Observation Sketchbook and Visual Documentation Students shall maintain a sketchbook or visual documentation diary containing rapid sketches, contour studies, biomimetic observations, contextual artifacts and	5	10



	environmental observations. Evaluation shall emphasize continuity, observation quality, exploration, improvement and documentation.		
	Total	20	10
	<u>Examination Style:</u> Contextual Observation Drawing (20 Marks) Students shall create analytical observation drawings from selected objects, artifacts or contextual forms. The examination shall assess proportion, contour, structural construction, tonal values, texture, observation accuracy and overall presentation. Observation Sketchbook and Visual Documentation (10 Marks) Students shall submit selected sketchbook studies and contextual observation exercises developed throughout the semester. The assessment shall evaluate consistency of observation, rapid sketching ability, biomimetic exploration, contextual understanding and progressive development.		
3	<u>Theory:</u> Spatial Geometry & Dimensional Representation Principles of dimensional representation. Depth, scale, proportion and volume. Horizon line, eye level and vanishing points. One-point, two-point and introduction to multi-point perspective. Representation of three-dimensional forms on two-dimensional surfaces. Spatial hierarchy and volumetric understanding. Human-scale relationships in spatial environments. <u>Practical:</u> 14) Construct basic geometric forms using one-point and two-point perspective. 15) Practice horizon line, eye-level and vanishing-point construction. 16) Develop perspective drawings of objects and simple spatial environments. 17) Construct volumetric forms using overlapping planes and proportional relationships.		
		22	20%



18) Execute scale and proportion studies using human figures and spatial elements. 19) Develop perspective overlays on basic interior and environmental forms. 20) Prepare analytical perspective sketches of real-world spaces through observation and environmental mapping.			
<u>Evaluation Method:</u>			
Sr. No.	Evaluation Methods	SEE	CCE
1	Perspective and Spatial Representation Students shall prepare perspective drawings demonstrating the correct application of horizon lines, eye level, vanishing points, scale, proportion, depth and volumetric representation. The assessment shall evaluate perspective construction, spatial understanding, dimensional accuracy, technical drawing quality and presentation.	20	
2	Perspective Observation and Spatial Documentation Students shall observe real-world environments and document examples of perspective, dimensional hierarchy, scale and spatial relationships through analytical sketches and visual studies. Evaluation shall focus on spatial observation, proportion, contextual understanding, accuracy and consistency.		10
Total		20	10
<u>Examination Style:</u> Perspective and Spatial Representation (20 Marks) Students shall create an analytical spatial drawing demonstrating the application of horizon line, eye level, vanishing points, scale,			



	proportion and volumetric depth. The examination shall evaluate perspective construction, spatial understanding, dimensional accuracy, drawing quality and presentation. Perspective Observation and Spatial Documentation (10 Marks) Students shall conduct contextual observation studies of interior, architectural or everyday environments and prepare analytical perspective sketches or spatial overlays. The submitted documentation shall be evaluated for spatial awareness, proportion, dimensional understanding, observation and clarity of visual communication.						
4	<u>Theory:</u> Material Physics & Tonal Visualization Basics of material representation and visual properties. Light and shadow relationships. Highlight, core shadow and reflected light. Matte, glossy, transparent, translucent and reflective surfaces. Texture representation. Warm and cool colour relationships. Basic colour harmony and visual impact. Representation of material characteristics including rigidity, softness, transparency and reflectivity. <u>Practical:</u> 21) Execute tonal studies using light, mid-tone, core shadow and reflected light. 22) Develop rendering exercises for matte, glossy, transparent and reflective surfaces. 23) Create texture studies for wood, stone, fabric, metal and other commonly observed materials. 24) Practice tonal rendering of geometric and organic forms. 25) Apply basic warm and cool colour relationships in visual compositions. 26) Develop material transformation exercises from reference observation to stylized representation. 27) Prepare a small material-rendering portfolio demonstrating tonal, textural and colour applications. <u>Evaluation Method:</u> <table><tr><td>Sr. No.</td><td>Evaluation Methods</td><td>SEE</td><td>CCE</td></tr></table>	Sr. No.	Evaluation Methods	SEE	CCE	21	20%
Sr. No.	Evaluation Methods	SEE	CCE				



	1	Material Rendering and Tonal Visualization Students shall complete practical rendering exercises demonstrating tonal values, light and shadow, texture, surface characteristics and basic colour application. The assessment shall evaluate rendering technique, observational accuracy, material representation, tonal control, colour application and presentation.	20		
	2	Material and Texture Exploration Students shall explore and document a range of natural and man-made materials through observation, texture studies, tonal studies and material-rendering exercises. Evaluation shall focus on observation, material understanding, experimentation, consistency and quality of visual documentation.		10	
	Total		20	10	

Examination Style:

Material Rendering and Tonal Visualization (20 Marks)
 Students shall complete a practical rendering examination demonstrating the representation of selected materials through tonal values, light and shadow, texture and basic colour relationships. The examination shall assess rendering technique, material recognition, tonal accuracy, visual communication and presentation quality.

Material and Texture Exploration (10 Marks)
 Students shall prepare a collection of material and texture studies based on observed surfaces from their surroundings. The documentation shall include tonal studies, texture representation and material exploration. Evaluation shall focus on observation,



	experimentation, material understanding and progressive development.										
5	<u>Theory:</u> Visual Communication and Presentation Visual ideation and conceptual development. Rapid brainstorming and thumbnail generation. Visual hierarchy and composition. Basic grid systems and layout planning. Annotation and visual communication. Process documentation and design storytelling. Principles of presentation through analog and digital formats. Selection and organization of visual material for effective communication. <u>Practical:</u> 28) Conduct rapid thumbnail and ideation exercises for simple design problems. 29) Develop multiple conceptual alternatives from a single design brief. 30) Prepare composition studies using visual hierarchy and grid-based layouts. 31) Develop annotated concept sheets communicating design intent clearly. 32) Prepare a structured process folio showing evolution from idea to final outcome. 33) Convert selected hand-drawn studies into organized digital or analog presentation sheets. 34) Present a final visual narrative combining concept, process, exploration and outcome. <u>Evaluation Method:</u> <table> <tr> <th>Sr. No.</th><th>Evaluation Methods</th><th>SEE</th><th>CCE</th></tr> <tr> <td>1</td><td> Creative Visual Communication Students shall develop and present a visual solution based on a given design problem. The assessment shall include ideation, thumbnail development, composition, visual hierarchy, process documentation, annotation and final presentation. Evaluation shall focus on creativity. </td><td>20</td><td></td></tr> </table>	Sr. No.	Evaluation Methods	SEE	CCE	1	Creative Visual Communication Students shall develop and present a visual solution based on a given design problem. The assessment shall include ideation, thumbnail development, composition, visual hierarchy, process documentation, annotation and final presentation. Evaluation shall focus on creativity.	20		21	20%
Sr. No.	Evaluation Methods	SEE	CCE								
1	Creative Visual Communication Students shall develop and present a visual solution based on a given design problem. The assessment shall include ideation, thumbnail development, composition, visual hierarchy, process documentation, annotation and final presentation. Evaluation shall focus on creativity.	20									



		visual clarity, communication, organization, conceptual development and presentation quality.				
	2	Idea Development and Presentation Process Students shall continuously develop a design idea from initial exploration to final visual presentation through sketches, alternatives, process studies and presentation layouts. Evaluation shall consider ideation, experimentation, process development, consistency, visual organization and communication.			10	
	Total		20		10	
	<u>Examination Style:</u> Creative Visual Communication (20 Marks) Students shall respond to a design problem through rapid visual ideation, thumbnail studies, concept development and final presentation. The examination shall assess creativity, visual storytelling, conceptual clarity, visual organization, problem-solving and presentation quality. Idea Development and Presentation Process (10 Marks) Students shall develop a structured process from an initial design idea to a final presentation sheet. The documentation shall include brainstorming, alternative compositions, annotations, process development and final layout. Evaluation shall focus on iterative development, creativity, visual hierarchy, communication and presentation.					



Suggested Specification table with Marks (Theory): 100

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage %	10%	10%	25%	15%	10%	30%

Course Outcome:

After learning the course, the students should be able to:	
CO1	Understand fundamental geometric principles, structural visual mapping, and design elements for effective technical and aesthetic communication.
CO2	Develop analytical observation and drafting skills to accurately extract and represent biomimetic forms, engineered objects, and spatial environments.
CO3	Apply multi-point dimensional frameworks and spatial geometry techniques to create accurate volumetric representations.
CO4	Demonstrate rendering and visualization techniques to communicate material qualities and design concepts.
CO5	Create comprehensive visual narratives and process folios that articulate interdisciplinary design concepts, blending structural logic with aesthetic intent across spatial and wearable domains.

Instructional Method:

The course delivery method will depend upon the requirement of content and the needs of students. A minimum of 20–30% of the course content shall be suggested to deliver through Flipped Learning, where students study digital learning resources before the classroom session. Classroom time shall be utilized for discussion, problem-solving, practical applications, and higher-order learning activities.

Students shall be encouraged to use AI-powered learning platforms, simulation software, virtual laboratories, digital libraries, research databases, online certification courses, NPTEL, SWAYAM, MOOCs, and other technology-enabled learning resources to strengthen conceptual understanding and practical competence.

Continuous assessment shall be conducted through Active Learning Assignments (ALAs), quizzes, skill demonstrations, presentations, practical exercises, projects, case studies, innovation activities.



peer assessment, reflective learning, and industry-oriented tasks instead of relying primarily on conventional written assignments.

Reference Books:

- [1] A. Pipes, **Drawing for Designers**. 1st ed. London, UK: Laurence King Publishing, 2007.
- [2] F. D. K. Ching and S. P. Juroszek, **Design Drawing**, 3rd ed. Hoboken, NJ, USA: John Wiley & Sons, 2019.
- [3] F. D. K. Ching, **Architectural Graphics**, 6th ed. Hoboken, NJ, USA: John Wiley & Sons, 2015.
- [4] K. Eissen and R. Steur, **Sketching: Drawing Techniques for Product Designers**. 1st ed. Amsterdam, Netherlands: BIS Publishers, 2007.
- [5] E. R. Norling, **Perspective Made Easy**, Mineola, NY, USA: Dover Publications, 1999.



Suggested Assessment Guidelines:**Module 1: Fundamentals of Visual Representation**

Visual Language and Composition (20 Marks)		
Criteria	Description	Marks
Observation and Visual Understanding	Demonstrates the ability to analytically observe and interpret foundational visual elements across interdisciplinary domains.	4
Drawing Fundamentals	Shows proficiency in structural geometry, dynamic composition, and translating visual perception into spatial formats.	4
Application of Design Elements	Effectively orchestrates elements and principles of design to establish structural stability and aesthetic harmony.	4
Creativity and Composition	Demonstrates originality and conceptual exploration without relying strictly on literal or recognizable objects.	4
Presentation Quality	Presents work with professional organization, visual clarity, and layout finishing.	4
Total		20

Module 2: Observation Drawing and Sketching

Contextual Observation Drawing (20 Marks)		
Criteria	Description	Marks
Observation Accuracy	Accurately translates complex contextual artifacts and organic formations with correct structural proportion.	5
Line Quality and Drawing Skills	Demonstrates effective biomimetic form extraction, continuous contour mapping, and construction techniques.	4
Tonal Values and Texture	Applies light, shadow, and surface texture methodologies effectively on human-centric artifacts.	4
Composition	Organizes visual data with appropriate spatial balance and hierarchy.	3
Presentation Quality	Presents analytical studies neatly with overall visual appeal.	4
Total		20

Module 3: Perspective and Spatial Representation

Perspective Drawing (20 Marks)		
Criteria	Description	Marks
Perspective Construction	Correct application of multi-point dimensional frameworks, spatial hierarchies, and eye-level manipulation.	5
Scale and Proportion	Maintains appropriate ergonomic scale and spatial relationships within macro and micro environments.	4
Spatial Representation	Effectively translates volumetric data into 2D planes, representing depth and three-dimensional space.	4



Drawing Quality	Demonstrates structural accuracy, clean line quality, and technical precision.	3
Presentation Quality	Presents drawings with clear layout organization and professional finishing.	4
Total		20

Module 4: Material Physics & Tonal Visualization

Basic Rendering and Visual Communication (20 Marks)		
Criteria	Description	Marks
Rendering Technique	Demonstrates effective use of diverse material visualization methodologies (analog or digital) to simulate tactile properties.	5
Light, Shadow and Texture	Accurately represents tonal orchestration, reflective surfaces, and structural volume.	4
Colour Application	Applies chromatic theory and psychological palettes to enhance structural clarity and emotion.	3
Visual Communication	Communicates physical properties (pliability, rigidity) and object characteristics effectively through rendering.	4
Presentation Quality	Presents rendered work with cohesive aesthetic finishing.	4
Total		20

Module 5: Visual Communication and Presentation

Creative Visual Communication (20 Marks)		
Criteria	Description	Marks
Idea Development	Demonstrates effective generative ideation through rapid visual mapping and concept development.	4
Visual Communication	Communicates complex interdisciplinary ideas clearly through structured layouts and annotation methodologies.	4
Creativity and Exploration	Demonstrates lateral thinking and creative exploration through iterative alternative compositions.	4
Process Documentation	Demonstrates systematic evolution of a core design concept through a comprehensive process folio.	4
Presentation Quality	Presents work seamlessly utilizing digital presentation ecosystems or structured analog layouts.	4
Total		20

