



Gyanmanjari
Innovative University

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

Subject: Workshop - DET2CD1120

Type of Course: Skilling-Based Course

Prerequisite: No prior technical knowledge of design software is required. Students are expected to possess a curiosity for self-discovery, hands-on experimentation, and an eagerness to explore tactile learning through various physical mediums.

Rationale: Design is a continuous reflection of human civilization, adapting to dynamic socio-cultural, technological, and environmental constraints. As a Skilling-Based Course, this workshop focuses on developing advanced tactile dexterity, vocational competency, and structural prototyping skills. By manipulating diverse material categories such as moldable, pliable, tensile, and rigid mediums students transition from theoretical spatial awareness to applied physical craftsmanship. The curriculum bridges hands-on structural logic with future-ready fabrication methodologies, empowering students to execute and construct interdisciplinary physical solutions encompassing both spatial environments and wearable artifacts.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks		Total Marks
CI	T	P	C	SEE	CCE	
0	1	4	3	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	1. Introduction to Tactile Observation & Visual Translation <u>Theory:</u> Introduction to the Material Studio and the relationship between hand, mind, and material. The role of sketching as a tool for observation and visual translation. Basics of form, proportion, scale, and texture. Introduction to translating 2D observations into 3D conceptual thinking and understanding the physical constraints of raw materials. <u>Practical:</u> - Conduct blind contour sketching exercises to develop hand-eye coordination. - Create a visual journal documenting varied textures from the campus environment using frottage techniques. - Execute rapid visualization sketches of everyday objects and analyse their geometric breakdown. - Translate a 2D observation of an organic or everyday form into a simple 3D wireframe structure. - Create a small composition using found natural materials to explore form, texture, and visual arrangement. - Prepare a short process record documenting observation, experimentation, and visual translation. <u>Evaluation Method:</u> <table border="1"> <thead> <tr> <th>Sr. no.</th><th>Evaluation Methods</th><th>SEE</th><th>CCE</th></tr> </thead> <tbody> <tr> <td>1</td><td> Visual Translation Analysis Students shall be given a physical object, natural element, or simple material arrangement and shall produce a series of analytical sketches within a stipulated time. The assessment shall evaluate observational accuracy, proportion, scale, geometric breakdown, texture representation, and line quality. </td><td>20</td><td></td></tr> <tr> <td>2</td><td>Observational Journaling</td><td></td><td>10</td></tr> </tbody> </table>	Sr. no.	Evaluation Methods	SEE	CCE	1	Visual Translation Analysis Students shall be given a physical object, natural element, or simple material arrangement and shall produce a series of analytical sketches within a stipulated time. The assessment shall evaluate observational accuracy, proportion, scale, geometric breakdown, texture representation, and line quality.	20		2	Observational Journaling		10	15	20%
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2	Observational Journaling		10												



	Students shall submit their visual journal and process documentation developed during the module. The assessment shall focus on consistency of observation, experimentation, visual communication, and presentation.				
	Total	20	10		
	<u>Examination Style:</u>				
	Visual Translation Analysis – 20 Marks				
	Students shall be provided with a physical object, natural element, or simple material arrangement and shall produce a series of analytical sketches within a stipulated time. The assessment shall evaluate observational accuracy, proportion, scale, geometric breakdown, texture representation, line quality, and the ability to visually translate observed forms.				
	Observational Journal & Process Work – 10 Marks				
	Students shall submit their visual journal and process documentation developed throughout the module. The assessment shall focus on consistency of observation, experimentation, visual communication, development of ideas, and quality of presentation.				
2	Volume & Plasticity: Exploring Moldable Mediums				
	<u>Theory:</u>				
	Understanding plasticity, volume, mass, and positive and negative space. Introduction to ergonomic relationships between form and human touch. Additive and subtractive sculpting methods. Basic structural limitations, drying behavior, and material response of clay, mud, and other earth-based materials.				
	<u>Practical:</u>				
	8. Explore clay preparation, wedging, and basic hand-building techniques including pinch, coil, and slab methods.				
	9. Create an abstract 3D form designed to fit the grip of a human hand, focusing on ergonomics.				
	10. Develop a self-supporting spatial form using clay, mud, or terracotta to understand weight distribution and stability.				
				15	20%



11. Experiment with surface relief, carving, and tactile texturing on a clay slab. 12. Observe and document drying, shrinking, cracking, and material behaviour through photographs and sketches. 13. Refine the final form through peer review and document the development process. <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>Form & Plasticity Evaluation An in-studio practical examination in which students shall receive a design prompt and develop a 3D form using clay or another specified moldable medium. Students shall demonstrate material handling, structural stability, ergonomic consideration, volume manipulation, and appropriate additive or subtractive techniques.</td><td>20</td><td></td></tr><tr><td>2</td><td>Tactile Prototype Continuous assessment based on the major clay or mud assignment. Evaluation shall consider craftsmanship, material understanding, structural stability, experimentation, refinement, and process documentation.</td><td></td><td>10</td></tr><tr><td colspan="2">Total</td><td>20</td><td>10</td></tr></table> <u>Examination Style:</u> Form & Plasticity Evaluation – 20 Marks An in-studio practical examination in which students shall receive a design prompt and develop a three-dimensional form using clay or another specified moldable medium. Students shall demonstrate appropriate material handling, volume manipulation, ergonomic consideration, structural stability, and application of additive and subtractive techniques. Tactile Prototype & Process Documentation – 10 Marks Continuous assessment based on the major clay or mud assignment.				Sr. no.	Evaluation Methods	SEE	CCE	1	Form & Plasticity Evaluation An in-studio practical examination in which students shall receive a design prompt and develop a 3D form using clay or another specified moldable medium. Students shall demonstrate material handling, structural stability, ergonomic consideration, volume manipulation, and appropriate additive or subtractive techniques.	20		2	Tactile Prototype Continuous assessment based on the major clay or mud assignment. Evaluation shall consider craftsmanship, material understanding, structural stability, experimentation, refinement, and process documentation.		10	Total		20	10
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3	Pliability & Surface: Fabric, Thread, and Paper <u>Theory:</u> Transformation of 2D planes into dynamic 3D forms. Basic structural properties of woven and non-woven materials. Concepts of tension, draping, suspension, folding, and surface manipulation. Introduction to origami, modular construction, tessellation, and sustainable use of flexible and recycled materials. <u>Practical:</u> 14. Execute paper-folding exercises to create self-supporting 3D structures from a single sheet. 15. Explore fabric manipulation techniques such as pleating, gathering, knotting, and basic surface construction. 16. Conduct a draping exercise using flexible material over a solid base or simple armature. 17. Create a flexible surface or skin using paper, thread, fabric, and tension techniques. 18. Develop a modular folding or tessellation pattern using recycled paper or fabric scraps. 19. Conduct a simple tensile or suspension experiment using different threads or yarns and document the observations. 20. Compile a physical material sample board presenting the explored techniques and material behavior. <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> Surface to Structure Analysis Students shall receive a flat piece of paper, fabric, or similar flexible material and shall create a stable 3D self-supporting form within a specified time using appropriate folding, tension, draping, suspension, or modular techniques. </td><td>20</td><td></td></tr> <tr> <td>2</td><td> Pliability Exploration Students shall submit a physical sample board documenting their </td><td></td><td>10</td></tr> </table>	Sr. no.	Evaluation Methods	SEE	CCE	1	Surface to Structure Analysis Students shall receive a flat piece of paper, fabric, or similar flexible material and shall create a stable 3D self-supporting form within a specified time using appropriate folding, tension, draping, suspension, or modular techniques.	20		2	Pliability Exploration Students shall submit a physical sample board documenting their		10	15	20%
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	material experiments. Evaluation shall focus on experimentation, material understanding, tensile behavior, sustainability, precision, neatness, and presentation.			
	Total	20	10	
	<u>Examination Style:</u> Surface to Structure Analysis – 20 Marks Students shall be provided with a flat sheet of paper, fabric, or another specified flexible material and shall transform it into a stable three-dimensional self-supporting form within a stipulated time. The assessment shall evaluate transformation logic, folding, tension, draping, suspension, structural stability, precision, and innovative use of the material. Pliability Exploration & Material Sample Board – 10 Marks Students shall submit a physical sample board documenting the material experiments conducted throughout the module. The assessment shall focus on experimentation, understanding of material behaviour, tensile properties, sustainability, precision, neatness, and quality of presentation.			
4	Structure & Assembly: Mixed Media & Joinery <u>Theory:</u> Introduction to linear materials such as wire, sticks, rods, and planar materials such as cardboard and mount board. Basic concepts of load, balance, symmetry, tension, compression, and structural integrity. Principles of non-adhesive joinery including slotting, tying, folding, and interlocking. Introduction to the structural behavior of mixed and upcycled materials. <u>Practical:</u> 21. Construct a freestanding tower using wooden dowels, sticks, rods, and thread, focusing on tension, compression, and balance. 22. Create a modular interlocking structure using recycled cardboard or mount board with zero-adhesive constraints. 23. Manipulate wire to create a continuous contour model	15	20 %	



representing a defined volume or object.			
24. Combine a rigid material with a flexible material to develop a small hybrid structure.			
25. Conduct controlled load and stability experiments on the developed models.			
26. Identify and document structural failure points and modify the design to improve stability and material efficiency.			
<u>Examination Style:</u>			
Sr. No.	Evaluation Methods	SEE	CCE
1	Structural Integrity Evaluation Students shall complete a practical structural problem-solving task using limited materials. The structure shall be required to bridge a specified gap or support a predefined load for a specified duration. Assessment shall focus on joinery logic, load distribution, balance, structural stability, and material efficiency.	20	
2	Modular Assembly Project Students shall submit and present an adhesive-free modular structure. The project shall be evaluated on precision of joints, stability, structural logic, creative use of upcycled materials, problem-solving, and quality of execution.		10
Total		20	10



	<u>Examination Style:</u> Structural Integrity Evaluation – 20 Marks Students shall complete a practical structural problem-solving task using limited materials. The structure shall be required to bridge a specified gap or support a predefined load for a specified duration. The assessment shall evaluate joinery logic, load distribution, balance, structural stability, material efficiency, and quality of execution. Modular Assembly Project – 10 Marks Students shall submit and present an adhesive-free modular structure developed during the module. The assessment shall evaluate precision of joints, stability, structural logic, creative use of upcycled materials, problem-solving, refinement, and quality of execution.		
5	Synthesizing Form & Function: Final Prototyping <u>Theory:</u> Synthesizing material knowledge for selecting suitable media for a specific purpose. Translating conceptual ideas into scaled prototypes. Understanding material constraints in human-centric applications. Introduction to iterative refinement, process documentation, design presentation, and verbal communication of design intent and material justification. <u>Practical:</u> 27. Identify a simple human-centric spatial or functional need such as an organizer, enclosure, holder, or small spatial element. 28. Conceptualize and sketch a multi-material prototype addressing the selected need. 29. Develop low-fidelity mock-ups using scrap materials to test proportion, scale, structure, and functionality. 30. Conduct material tests to determine the suitability of selected materials for the final prototype. 31. Construct the final physical scale prototype using at least two material categories explored during the semester. 32. Document the complete making process including initial ideas, material tests, mock-ups, iterations, failed attempts, and refinements. 33. Conduct a structured peer review and refine the prototype	15	20%



based on feedback. 34. Present the final prototype to a jury and explain the functional logic, material choices, structural decisions, and aesthetic outcome. <u>Evaluation Method:</u>			
Sr. No.	Evaluation Methods	SEE	CCE
1	Final Prototype Presentation A jury-style practical evaluation in which students shall display and present their final multi-material prototype. Assessment shall evaluate functional resolution, structural and technical execution, appropriate material selection, craftsmanship, aesthetic quality, and the student's ability to clearly articulate design intent and development.	20	
2	Process & Iteration Folio Students shall submit a complete process document containing sketches, material experiments, mock-ups, failed attempts, revisions, peer feedback, and final development. The folio shall be evaluated on continuity of development, experimentation, documentation quality, reflection, problem-solving, and refinement.		10
Total		20	10
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	Process & Iteration Folio – 10 Marks Students shall submit a complete process folio containing initial sketches, material experiments, low-fidelity mock-ups, failed attempts, revisions, peer feedback, and final development. The assessment shall focus on continuity of development, experimentation, documentation quality, reflection, problem-solving, and refinement.		
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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 %	05%	10%	30%	15%	15%	25%

Course Outcome:

After learning the course, the students should be able to:	
CO1	Comprehend the tactile, structural, and visual properties of diverse raw materials through hands-on observation and foundational sketching.
CO2	Execute subtractive and additive sculpting techniques on moldable materials to demonstrate physical competency in volume manipulation and human-centric ergonomics.
CO3	Analyze the structural logic of flexible and rigid materials, utilizing non-adhesive joinery and folding techniques to transform 2D planes into 3D forms.
CO4	Construct physical, interdisciplinary prototypes by engineering mixed-media joinery, demonstrating technical proficiency in solving functional spatial and wearable problems.
CO5	Evaluate the personal design journey through iterative process documentation, developing a unique aesthetic identity rooted in purpose and material logic.

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] D. A. Lauer and S. Pentak, **Design Basics**, 9th ed. Boston, MA, USA: Cengage Learning, 2015.
- [2] M. Goldstein, **How to Be a Design Student (and How to Teach Them)**, 1st ed. New York, NY, USA: Princeton Architectural Press, 2023.
- [3] A. Kleon, **Steal Like an Artist: 10 Things Nobody Told You About Being Creative**, 1st ed. New York, NY, USA: Workman Publishing, 2012.
- [4] J. Itten, **The Elements of Color**, 1st ed. New York, NY, USA: John Wiley & Sons, 1970.
- [5] P. Jackson, **Folding Techniques for Designers: From Sheet to Form**, 1st ed. London, UK: Laurence King Publishing, 2011.



Suggested Assessment Guidelines:**Module-1: Introduction to Tactile Observation & Visual Translation Visual Translation Analysis**

Introduction to Tactile Observation & Visual Translation Visual Translation Analysis (20 Marks)		
Criteria	Description	Marks
Observational Accuracy	Evaluates the student's ability to accurately capture real-world proportions, scale, and spatial relationships of objects within their sketch folio.	5
Line Quality & Technique	Assesses the fluidity, confidence, and appropriate use of sketching techniques (e.g., blind contour, rapid visualization) to communicate form rather than just illustrating it.	5
Geometry Breakdown	Measures the capability to deconstruct complex organic and everyday forms into foundational geometric shapes (cubes, spheres, cylinders) for structural understanding.	5
Texture Representation	Judges the effectiveness of translating physical, tactile surfaces (using frottage and shading) into 2D analytical drawings.	5
Total		20

Module-2: Volume & Plasticity: Exploring Moldable Mediums

Earth & Plasticity: Exploring Clay and Mud Form & Plasticity Evaluation (20 Marks)		
Criteria	Description	Marks
Volume and Mass Comprehension	Evaluates the student's hands-on understanding of positive and negative space, and how they distribute visual and physical weight in earth-based materials.	5
Ergonomic Logic	Assesses how well the sculpted clay/mud form logically responds to human touch, bodily scale, and functional grip requirements.	5
Structural Stability	Measures the physical integrity of the mud/clay prototype, specifically its ability to be self-supporting without collapsing during the drying process.	5
Surface & Tactile Finishing	Judges the craftsmanship, application of subtractive/additive relief techniques, and the overall tactile quality of the final physical form.	5
Total		20

Module-3: Pliability & Surface: Fabric, Thread, and Paper

Pliability & Surface: Fabric, Thread, and Paper Surface to Structure Analysis (20 Marks)		
Criteria	Description	Marks
Transformation Logic	Evaluates the conceptual and physical process of successfully converting a flat 2D plane (paper/fabric) into a dynamic, 3D	5



	structural enclosure or form.	
Tension and Draping Application	Assesses the effective use of material flexibility, suspension, and draping to define spatial forms without relying on rigid internal armatures.	5
Modular Innovation	Measures the creativity and precision in utilizing folding, origami, or modular tessellation techniques to create expanding/contracting surfaces.	5
Material Handling & Respect	Judges the neatness, lack of reliance on adhesives, and overall respect for the inherent structural properties of the pliable medium.	5
Total		20

Module-4: Structure & Assembly: Mixed Media & Joinery Structural Integrity Evaluation

Structure & Assembly: Mixed Media & Joinery Structural Integrity Evaluation (20 Marks)		
Criteria	Description	Marks
Joinery & Connection Logic	Evaluates the successful application of non-adhesive joinery techniques (slotting, tying, interlocking) to create strong structural bonds between raw materials.	5
Load Distribution & Balance	Assesses the structure's ability to effectively balance physical weight, manage tension/compression, and maintain overall symmetry and stability.	5
Material Integration	Measures the logical and aesthetic success of combining distinct material categories (e.g., rigid wood/wire with flexible fabric/paper) into a cohesive hybrid structure.	5
Upcycling Ingenuity	Judges the creative and structural repurposing of everyday scrap or found materials to construct the adhesive-free modular assembly.	5
Total		20

Module-5: Synthesizing Form & Function: Final Prototyping

Final Prototype Presentation (20 Marks)		
Criteria	Description	Marks
Purpose and Functional Resolution	Evaluates how effectively the final multi-material prototype addresses and solves the chosen abstract, human-centric spatial or functional problem.	5
Aesthetic & Visual Language	Assesses the overall visual impact, craftsmanship, and cohesive design identity of the final scale model.	5
Material Justification	Measures the logical reasoning behind the selection of specific mediums, ensuring they structurally and conceptually support the prototype's intended use.	5



Process Articulation & Defense	Judges the student's ability to verbally present their design journey, confidently defend their material choices, and articulate insights gained from failed iterations.	5
Total		20

