GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Design Syllabus (Industrial Design)

Subject Code : 10140304

Subject Name : Joinery and Hardware Detailing

WEF Academic Year:	2024-25
Semester:	4
Category of the Course:	PCC

Prerequisite :	none
Rationale:	Materials and production processes often define a predominant aspect of design considerations as every business/production entity is equipped with unique materials and manufacturing infrastructure. Ability to work with these constraints in design projects is a valuable capability for designers and provides opportunity to innovate within materials production constraints and maximize their value in design development of products.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level*
01	Develop value of joinery and detailing in design of products.	U, R
02	Enable critical judgment on leveraging material properties in visualization of joinery and detailing in new product development	U, R
03	Develop competencies in analyzing and improving details of existing products	U
04	Create sensibilities to incorporate joinery and detailing as an integral part of aesthetic and functional concept development.	U
05	Inspire students to add value to new design through innovative detailing for better functionality across the lifecycle of the product.	U, R

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (In Hours)			Total Credits L+T+(PR/2)	Assessment Pattern and Marks		Total Marks
L	T	PR	C	Theory	Tutorial/Practical	

				ESE (E)	PA/CA (M)	ESE (V)	PA/CA (I)	
0	2	4	4	0	30	50	20	100

Continuous marking based on classroom assignments pertaining to different aspects of visual Design Elements. Final internal presentation in form of course documentation. End semester evaluation by external jury to evaluate extent and quality of explorations, initiative, originality of visual ideas and overall understanding of various visual elements of form and aesthetics.

Course Content:

Unit No.	Course Content	No. of Hours	% of Weightage
1	**Unit I: Understanding Joinery and Hardware** Appropriate and effective joinery and hardware are meant to serve a specific function in a product. Products require to be designed keeping in mind mechanical needs of functions (joinery of parts, sealing for liquids, air, heat, etc,), assembly, maintenance, repair, safety, aesthetics and dynamic movements. Exposure through examples of standard and innovative joinery and detailing to be discussed and shared.	30	32
2	**Unit II: Orientation to Hardware** Exposure to different kinds of standard and specialized hardware and details used for use in wood, plastics, ceramics, metals, concrete, glass, fabrics, leather etc. and how they enable a particular function, need, material properties and required product performance.	30	32
3	**Unit III: Introduction to Detailing and joinery** Exposure to various established methods of joinery in wood, metals, plastics, rubber, elastomers, standard and specialized hardware available. Example of innovations in detailing across different materials, products including multi-material combinations.	30	36
	Total	90	100

Suggested Specification Table with Marks :

Distribution of Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
30	15	15	15	10	15

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

- Noll, Terrie, The Joint Book: The Complete Guide to Wood Joinery Illustrated, 2009
- Sato, Hideo, The Complete Japanese Joinery, Hartley and Marks Publishers, 2000.
- Mastro, Paul F. Plastics Product Design Hardcover – Import, 6 May 2016
- Metal Work Is Awesome: Unique 100 Page A4 Metal Work Textbook Notebook:Awesome Textbook Publishing Co
- Remus, Timothy, Advanced Sheet Metal Fabrication Paperback – February 15, 2003
- https://www.guaduabamboo.com/blog/joining-bamboo
- https://www.uti.edu/blog/welding/joint-types
- https://www.jcfasteners.com/joining-techniques-for-plastics/

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