



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Design Syllabus (Industrial Design)

Subject Code : 10130302

Subject Name : Ergonomics of Products and Interface

WEF Academic Year :	2024-25
Semester :	3
Category of the Course :	Core

<b>Prerequisite :</b>	none
<b>Rationale :</b>	Understanding and knowledge of human factors and their capabilities and limitations human body to be applied to design of products, environments and processes to offer best possible comfort and ease of use and performance. Various aspects of physical, sensory and cognitive abilities of human bodies form a critical criteria for providing value in design.

## Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Practical		
				ESE (E)	PA(M)	ESE (V)	PA (I)	
2	0	0	2	70	30	30	20	150

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:

Sr. No.	Course Content	No. of Hours	% of Weightage
1	<b>UNIT I:</b> Ergonomics: its definition, history, application and overview: human factors. perspectives and aspects of ergonomics. physical/cognitive/industrial/occupational. applications of ergonomics. man-machine environment.	4	20
2	<b>UNIT II:</b> Preliminary Anatomy, Body Dynamics. Basic Body Mechanics. Postures like Sitting, standing, etc in relation to tasks. Postures and body supporting devices. Body Dimensions – Static & Dynamic Anthropometry and Measurement techniques.	6	20



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3	<b>UNIT III:</b> Understanding human- machine/product/space physical relationship to facilitate comfort, ease of use, and function within intuitive cognition and biomechanical limitations of movements of humans.	6	20
4	<b>Unit IV :</b> Cognitive and behavioral aspects in psychological ambience. Signage, visual semantics, displays and Control panels and sensory cognition. Information is processed with intuition, attention, concentration, perception, memory and decision making. Cross-cultural Design challenges.	6	20
5	<b>UNIT V:</b> Impact of Adverse Environment. Heat & Cold. Performance impact with respect to Light, Sound and Vibration. Preventive measures and Personal protective equipment.	6	20
	<i>The Course will involve various assignments to experiment and understand different principles of ergonomics through analysis of existing examples and actual applications in simple design of objects, interfaces and environments.</i>		
<b>Total</b>		<b>28</b>	<b>100</b>

### Reference Book:

- De Bono, Edward, Lateral Thinking, Penguin, 1972
- Jones, J. C., Design Methods: Seeds of Human Futures, Wiley London, 1992
- Jones, J. C., Design Methods for Everyone, 2018
- Alexander, Christopher, A Pattern Language, Oxford University Press, 1977
- Kelly, Tom, Art of Innovation, Doubleday, 2001
- Kumar, Vijay, 101 Design Methods: A structured Approach for Driving Innovation in Your Organisation, Wiley, 2013

### Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level*
01	Familiarize students with principles of ergonomics and their criticality in development of human centered design.	
02	Provide tools for measuring comfort, ease of use and convenience through real-life iterations.	
03	Provide knowledge of human anthropometry, limitations of human body, body motions, environmental factors and intangible human response in relation to comfort.	
04	Enable understanding of cognitive considerations in design of signage, display, controls and related issues of sensory perception.	

\*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create



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