DEPARTMENT OF COMPUTER SCIENCE & DESIGN

COURSE MODULE FOR THE SESSION 2026(EVEN SEMESTER)

Academic Year: 2025-2026

Department: Computer Science & Design

Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours			Total Hrs/ Sessions
				L	T	P	
BCG602	**Design Processes and Perspectives**	Core	**Design processes, design principle, design tools**	4	-	-	50

Objectives:

- Gain a strong foundation in design processes and methodologies.
- Master the principles of user-centered design to create effective solutions.
- Foster creative thinking and enhance prototyping skills for innovative design.
- Utilize advanced design tools and technologies to develop functional products.
- Incorporate ethical, cultural, and sustainability considerations into the design process.

Topics Covered as per Syllabus

Module -1

Foundations of Design Processes : Introduction - Design basics, Engineering design process ,Importance of the Engineering Design Process Types of Designs, A Simplified Iteration Model, Design Method Versus Scientific Method , A Problem-Solving Methodology , Considerations of a good design , Societal considerations in engineering design, Problem definition and need identification.

Module -2

User-Centered Design Principles: Gathering information, data, information, and knowledge, information literacy and the internet, finding sources of design information , Library sources. Embodiment design, Product architecture, Steps in developing product architecture.

Module -3

Creative Thinking and Prototyping : Introduction to creative thinking, Creativity and problem solving, supports to creative thinking, Barriers to creative thinking, Creative thinking methods, Brainstorming, Quick idea generation tools, Methods for design generation. Generating design concepts, Systematic methods for designing, Decision making and concept selection, Behavioral aspects of decision making, Evaluation processes, Design selection based on judgment and experience.

Module -4

Design Tools and Technologies :

Visual Design Basics: The Golden Rules, Place the User in Control, Reduce the User's Memory Load, Make the Interface Consistent, User Interface Design Steps, Interface Design Steps, Applying Interface Design Steps, User Interface Design Patterns, WebApp Interface Design,, WebApp Interface Design, Interface Design Principles and Guidelines, Interface Design Workflow for WebApps, Computer Science Design Basics, Design Patterns, Kinds of Patterns, Frameworks, Pattern-Based Software Design, Pattern- Based Software Design, Pattern-Based Design in Context, Thinking in Patterns, User Interface Design Patterns, WebApp Design Patterns.

Module -5

Ethical, Cultural, and Sustainable Design : The environmental movement, Ecosystems and balance, Dependence on fossil fuels, Behavior changes started by the u.s. environmental movement, Sustainability, Wced report on sustainability, Challenges of sustainability for business, End-of-life product transformations.

Textbooks:

1. "Engineering Design: A Systematic Approach (6th Edition)" by Gerhard Pahl and Wolfgang Beitz. 6th edition
2. "Software Engineering: A Practitioner's Approach" by Roger S. Pressman.7th Edition

Reference Books

1. "The Design of Everyday Things" by Don Norman, 2nd Edition (2013).
2. "Design Thinking: Process and Methods" by Robert Curedale, 3rd Edition (2013).

COURSE OUTCOME:

- Demonstrate a comprehensive understanding of design processes and their applications in engineering.
- Apply user-centered design principles to develop effective and innovative solutions.
- Apply creative thinking and problem-solving skills through prototyping and design generation methods.
- Make use of design tools and technologies to create functional and user-friendly interfaces.
- Integrate ethical, cultural, and sustainability considerations into design solutions.

Internal Assessment Marks: 40 (3 Session Tests are conducted during the semester and Marks allotted based on best of 2 test performances).

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code	BCG602			Title: Design Processes and Perspectives								
List of Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Total
CO-1	3	2	2	-	-	-	-	-	-	-	-	-	7
CO-2	3	2	2	-	-	-	-	-	-	-	-	-	7
CO-3	3	2	2	-	1	-	-	-	-	-	-	-	8
CO-4	3	2	2	-	1	-	-	-	-	-	-	1	9
CO-5	2	2	2	-	-	1	1	1	-	-	-	1	10
Total	14	10	10	-	2	1	1	1	-	-	-	2	41

The Correlation of Program Specific Outcome's (PS0's) and Course Outcome (CO's)

Subject Code	BCG602	Title: Design Processes and Perspectives	
List of Course Outcome's	**PSO1**	**PSO2**	**Total**
CO-1	-	-	-
CO-2	-	-	-
CO-3	-	-	-
CO-4	-	-	-
CO-5	-	-	-
Total	-	-	-

Note: 3 = Strong Contribution 2 = Average Contribution 1= Weak Contribution - = No Contribution