

Subject Code: 1ET1100404	Subject Title: Usability Design for Software Application
Prerequisite	--

Course Objective: Usability in software engineering refers to the levels to which a design can be used by a certain number of users to attain the set objectives with efficiency, effectiveness and high level satisfaction in a particular context. The 5 Es – efficient, effective, engaging, error tolerant and easy to learn – describe the multi-faceted characteristics of usability.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	1	2	5	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Usability Fundamentals and Quality - Usability and utility, Ease of use, necessity of usability considerations, cost and time considerations, Quality concepts, internal and external quality criteria, Industry quality standards	5	15
2	User Interface and the User Experience - Software Development Life Cycle, User Interface development process, User Experience design principles, Design thinking and problem solving approach	5	15
3	User Experience Analysis and Design - Understanding users, requirements, perceptions, abilities and constraints, Human-Computer Interaction (HCI), Constant iterative optimization and prototyping, Five dimensions of interaction design	7	20
4	Usability Design of Mobile Applications - Defining Mobile Learning (m-learning), Pedagogy of m-learning, Cognitive Load Theory (CLT), Design considerations for mobile devices and optimization with responsive design	5	15
5	Information Visualization - Understanding visualization, Common uses for information visualization, Design scenarios, Use cases on information visualization	5	15
6	Usability Heuristics and Smart Design - Heuristic evaluation and visibility (feedback), Severity rating and methods for evaluating the usability, Ergonomic design with navigation structure and enlarger methods, Digital Human Model (DHM) software and Biophilic design	7	20

Course Outcome:

After learning the course, the students should be able to:

CO1: Comprehend the usability concept, considerations and generations of usability.

CO2: Employ usability engineering lifecycle for designing a user friendly software and user experience analysis and design.

CO3: Understand usability design of mobile applications.

CO4: To understand information visualization and Usability Heuristics and Smart Design.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Comprehend the usability concept, considerations and generations of usability.	Understanding
CLO2	Employ usability engineering lifecycle for designing a user friendly software and user experience analysis and design.	Understanding, Applying
CLO3	Understand usability design of mobile applications.	Understanding, Applying
CLO4	To understand information visualization and Usability Heuristics and Smart Design.	Analyzing, Creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	M	M	H	H	M	L		M	M	M	M	M	H	L	L
CLO2	H	M	H	H	M	H	L		M	M	L	L	H	M	M	M
CLO3	H	M	H	M	H	M	M		H	L	M	M	H	M	M	M
CLO4	H	H	M	H	H	M	L		M	M	M	L	M	H	M	M
CLO5	M	M	M	H	M	M	L		M	M	M	L	M	H	M	M

H:High, M:Medium, L:Low

List of References:

- (1) Handbook of Usability Testing: How to Plan, Design and Conduct Effective Tests (2008)
- (2) Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics, 2nd edition (2008)
- Don't Make Me Think: A Common Sense Approach to Web Usability by Steve Krug

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Study the complete Software Development Life Cycle (SDLC) and analyze various activities conducted as a part of various phases. For each SDLC phase, identify the objectives and summaries outcomes. Consider any project to be developed in any technology as a Software Architect or Project Manager. Consider all phases of SDLC.