Course Code	CSE5xx
Department	
Course Name	Systems Analysis, Design and Requirements Engineering
Credits	4
Course Offered to	PG / UG
Whether the course is to be counted towards M.Tech specialization. If yes, please select the specialization towards which it is to be counted	
If the course is to be counted towards other B.Tech programs(For Ex if a course with CSE no. satisfies the requirement of 32 credits of B.Tech ECE program that students have to do in last 4 semesters, then the drop down answer should be ECE)	
Course Description	System analysis, design and requirements engineering course deals with planning the development of software systems through analysing, understanding, specifying and designing the different components of the software system and how they work together. Software development teams usually solve business problems through analyzing the requirements and designing systems by applying analysis and design techniques. This course deals with the concepts, skills, taxonomies, techniques, theories, and cognitive perspectives essential for the same. Students would understand various theories of software engineering and apply them in analyzing and designing software systems. Requirements derived will be used to develop abstraction of user-centered designs at conceptual level with focus on human psychological (cognitive) aspects. Emphasis is mainly placed on the various software engineering process theories and taxonomies that would help explain and understand (and sometimes predict) how and when an (SE) entity changes and develops.

Pre-requisites

Pre-requisite (Mandatory)	Pre-requisite (Desirable)	Pre-requisite(other)
	Basic understanding of software engineering and management	

*Please insert more rows if required

Post Conditions

CO1	CO2	CO3	CO4	CO5
Identify and develop key skills required to analyse software development processes (e.g. identifying key requirements, produce creative UC designs, apply bias mitigation techniques).	Distinguish between various approaches to systems analysis and design and their strengths and weaknesses (e.g. traditional waterfall Vs SCI theory)	Develop the ability to gather data to recognize, analyze and specify the requirements of a system and generate designs for a system that can fulfill the requirements.	Recognize various cognitive limitations associated with requirements determination and designs and produce ways to mitigate it.	Identifying when, where and how to use Agile software development approaches like Scrum, Kanban, DevOps.

Weekly Lecture Plan

Week Number	Lecture Topic	COs Met	Assignment/Labs/Tutorial
Week 1	An introduction to software analysis and traditional methods of software development - The need to move away!	CO 1	
Week 2	Modern (empirical) approach to software development / Theories of software development and software design.	CO1, CO2	Quiz, Assignment
Week 3	Same as Week 2	CO1, CO2	
Week 4	An introduction to various Agile software development approaches.	CO5	Quiz, In-class exercise
Week 5	Software requirements and requirements engineering -	CO1, CO3	Quiz, Assignment
Week 6	Requirement analyses and user-centered designing. Epistemological	CO3	Quiz, in-class exercise
Week 7	Understanding creativity in software and software development	CO1, CO3	Quiz, Assignment
Week 8	Techniques and (in-class) tutorial to improve creativity in software designs	CO3	In-class exercise
Week 9	Introduction (and challenges) to develop software process theories.	CO2, CO5	In-class exercise
Week 10	Human (behavioral and psychological) aspects of software engineering	CO4	Quiz, Assignment
Week 11	Introducing an Empirical Model of Design	CO3, CO4	Quiz, in-class exerise
Week 12	Student presentations		Report submission
Week 13	Student presentations		Report submission

*Please insert more rows if required

Assessment Plan

Type of Evaluation	% Contribution in Grade
Pre-reading Quizzes	10
In class Quizzes	10
Homework Assignments	10
Mid-Sem	20
End-Sem	30
Term Project and Report	20

*Please insert more row for other type of Evaluation

Resource Material

Type	Title
Latest research publications / text books	Would be conveyed to the students appropriately.
1. Ralph, Paul, and Briony J. Oates. "The	
2. Ralph, Paul. "The two paradigms of	
3. Mohanani, R., Salman, I., Turhan, B.,	
4. Ralph, Paul. "Introducing an empirical	