

Course Title	Software Engineering I				
Course Code	CSE325				
Course Type	Compulsory				
Level	Bachelor (1 st Cycle)				
Year / Semester	3 rd Year/6 th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	<p>The material is designed to support a first part of a course in software engineering of an applied program. A student's first task is to gain a sense of the underlying process of the issues involved in the analysis of a system, the identification of the problem areas and the development of alternative solutions. A key objective of this course is the production of the Software Requirements Specification document which will be used in a later course as the base of the design and development of a software system.</p>				
Learning Outcomes	<p>After the completion of this course the student should be able to:</p> <ul style="list-style-type: none"> • Describe the principles of Software Engineering and the main software development process models • Plan, schedule and control a software development project • Elicit and analyze requirements for a software development project and construct the software requirements specification document • State the fundamental concepts of software design • Create design model representations of software data, architectures, components and interfaces <p>Construct the software design specification document</p>				
Prerequisites	CSE230, CSE310	Required	None		
Course Content	<p>Software Engineering:</p> <p>What is Software Engineering? The need for software engineering. Software characteristics, components and applications. Software reliability, software reuse, Software process models: waterfall model, incremental model, prototyping, RAD model, spiral model, Rational Unified Process, Agile Methodology. Systems concepts, boundaries, environment, inputs, outputs, characteristics of systems.</p> <p>Object-Oriented analysis:</p> <p>Unified Modeling Language. UML diagrams: class/object diagrams, activity diagrams, swimlane diagrams, sequence diagrams, state diagrams.</p> <p>Project Management:</p> <p>Management activities, project planning, project scheduling, Managing teams, the team leader. Task definition, work allocation. PERT diagrams,</p>				

	<p>GANTT diagrams, the Critical Path Method (CPM). Risk management, quality management, configuration management, process improvement activities.</p> <p>Estimation:</p> <p>Estimating effort, time and cost. Human, Hardware and Software resources, Software productivity metrics. Cost estimation techniques.</p> <p>Design in the context of Software Engineering</p> <p>Main elements of the design process: architectural design, component design, data design, algorithm design, interface design.</p> <p>System design concepts</p> <p>Coupling, cohesion, layering, partitioning.</p> <p>Architectural design considerations</p> <p>Architectural styles: repository style, client-server style, peer-to-peer style, layered style, multi-tier styles, pipes and filters style. Decomposition styles, control styles.</p> <p>The Object-Oriented design process</p> <p>System decomposition, deployment diagrams, hardware/software mapping, object design, reuse concepts, design patterns, object interface design.</p> <p>Recent developments and contemporary issues pertaining to the subject-matter of the course.</p>								
Teaching Methodology	Face – to – face								
Bibliography	<p>Sommerville Ian, SOFTWARE ENGINEERING, Addison-Wesley</p> <p>Pressman Roger, S., SOFTWARE ENGINEERING: A PRACTITIONERS APPROACH, McGraw Hill</p> <p>Bruegge, B. and Dutoit, A.H., OBJECT-ORIENTED SOFTWARE ENGINEERING USING UML, PATTERNS AND JAVA, Pearson Prentice Hall</p>								
Assessment	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Final Examination</td> <td style="text-align: center;">50%</td> </tr> <tr> <td>Project</td> <td style="text-align: center;">40%</td> </tr> <tr> <td>Class Participation and Attendance</td> <td style="text-align: center;">10%</td> </tr> <tr> <td></td> <td style="text-align: center;">100%</td> </tr> </table>	Final Examination	50%	Project	40%	Class Participation and Attendance	10%		100%
Final Examination	50%								
Project	40%								
Class Participation and Attendance	10%								
	100%								
Language	English								