

## ***CS 4273: Software Engineering***

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**Required Course:** Elective  
**Course Number:** CS 4273  
**Course Name:** Software Engineering  
**Credit Hours:** 3  
**Lecture Hours:** 3  
**Lab Hours:** 0  
**Instructors:** Dr.J.Cecil

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**Book Title(s):** *Software Engineering – A Practitioner’s Approach*: Eighth edition  
**Book Author(s):** Roger Pressman and Bruce Maxim

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**Course Description:** Fundamental characteristics of the software life cycle. Tools, techniques, and management controls for development and maintenance of large software systems. Software metrics and models. Human factors and experimental design.

**Course Prerequisites:** CS 2133 (Computer Science II), CS 3653 (Discrete Mathematics for Computer Science) and (CS 3443 (Computer Systems) or ECEN 3213 (Microcomputer Principles and Applications))

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**Course Goals:** The primary objective of this course is to introduce students to concepts, principles and methods in software engineering. Students will be exposed to theory as well as the practices relevant to software engineering; there will be a significant emphasis on model building and software design. Students will be expected to acquire experience in software engineering practices through homework and project activities. A secondary objective is to encourage students to work as teams as well as become proficient at presenting their work to the class.

### **Student Outcomes:**

<b>Student Outcomes</b>	<b>Course outcomes</b>
1	Ability to identify the different phases in the software engineering process.
2	Ability to apply structured concepts, methodologies for the analysis and design of information systems.
3	Ability to develop use case diagrams (IDEF based and others), function models, collaboration, sequence and class diagrams based on the Unified Modeling Language

5	Ability to work as part of a team to design and build software applications
6	Ability to give technical presentations

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**Course Topics:**

Knowledge Area	Total Hours of Coverage
Software Engineering (SE)	48

Knowledge Area	Knowledge Unit	Topics	Hours of coverage
SE	software process	Introduction to Software Engineering	3
SE	software process	Elements of Software Engineering	3
SE	software process	Software Process Structure	3
SE	software process	Role of Use Cases and creating use case diagrams	3
SE	Reqs engg	Requirements Engineering	3
SE	Reqs engg	Requirements Modeling (scenario methods)	3
SE	software process	Software Engineering Process Models	3
SE	software process	Agile software engineering process	3
SE	Software Design	Activity Diagrams and use case scenarios	3
SE	Software Design	UML: Class diagrams	3
SE	Software Design	UML: Sequence diagrams	3
SE	Software Design	UML: Communication diagrams	3
SE	Software Design	Design Concepts	3
SE	Software Project management	Project management	3
SE	Software Construction	Testing and Role of Mockups	3
SE	Software Construction	Designing and Building Software Systems (team-based project discussions)	3