

Course Title: **Software Engineering (3 Cr.)**  
Course Code: **CACS253**  
Year/Semester: **II/IV**  
Class Load: **4 Hrs. / Week (Theory: 3 Hrs, Tutorial: 1)**

### **Course Description**

This course includes the topics that provide fundamental concept and standard of software engineering so that students will be able to develop software and/or handle software project using the global standard of software.

### **Course Objectives**

This Course is designed to provide the students with the basic competencies required to identify requirements, documents the system design and maintain a developed system. It presumes a general understanding of computers and programming which are covered in the first and second semester of the degree.

### **Course Contents**

#### **Unit 1 Introduction**

**4 Hrs.**

Definition of Software, Type of Software, Characteristic of Software, Attributes of Good Software, Definition of Software Engineering, Software Engineering Costs, Key Challenges that Software Engineering Facing, System Engineering and Software Engineering, Professional Practice.

#### **Unit 2 Software Development Process Model**

**8 Hrs.**

Software Process, Software Process Model: The Waterfall Model, Evolutionary Development, Component-Based Software Engineering (CBSE); Process Iteration: Incremental Delivery, Spiral Development; Rapid Software Development: Agile Methods, Extreme Programming, Rapid Application Development, Software Prototyping; Rational Unified Process (RUP), Computer Aided Software Engineering (CASE): Overview of CASE Approach, Classification of CASE tools.

#### **Unit 3 Software Requirement Analysis and Specification**

**10 Hrs.**

System and Software Requirements, Type of Software Requirements: Functional and Non-Functional Requirements, Domain Requirements, User Requirements; Elicitation and Analysis of Requirements: Overview of Techniques, View Points, Interviewing, Scenarios, Use-Case, Ethnography, Requirement Validation, Requirement Specification, Feasibility.

#### **Unit 4 Software Design**

**10 hrs.**

Design Concept: Abstraction, Architecture, Patterns, Modularity: Cohesion, Coupling; Information Hiding, Functional Independence, Refinement; Architectural Design: Repository Model, Client Server Model, Layered Model, Modular Decomposition; Procedural Design Using Structured Methods, User