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 projects 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.

**Unit 2 Software Development Process Model**
8 Hrs.

**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
Interface Design: Human-Computer Interaction, Information Presentation, Interface Evaluation; Design Notation.

**Unit 5  Coding**  
2 Hrs.  
Programming Language and Development Tools, Selecting Languages and Tools, Good Programming Practices

**Unit 6  Software Testing and Quality Assurance**  
6 Hrs.  

**Unit 7  Software Maintenance**  
3 Hrs.  
Evolving Nature of Software, Different Types of Maintenance: Fault Repair, Software Adaptation, Functionality Addition or Modification; Maintenance Prediction, Re-Engineering, Configuration Management (CM): Importance of CM, Configuration Items, Versioning;

**Unit 8  Managing Software Projects**  
2 Hrs.  
Needs for the Proper Management of Software Projects, Management Activities: Project Planning, Estimating Costs, Project Scheduling, Risk Management, Managing People;

**Teaching Methods**

The general teaching pedagogy includes class lectures, group discussions, case studies, guest lectures, research work, project work, assignments (theoretical and practical), and examinations (written and verbal), depending upon the nature of the topics. The teaching faculty will determine the choice of teaching pedagogy as per the need of the topics.

**Evaluation**

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