Software Engineering

Lec 1

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Course Description

Course Description

Software Engineering Concepts and Methodologies; Formal Requirements Specification; Estimation; Software Project Planning; Detailed Design; Techniques of Design; Productivity; Documentation; Programming Language Styles; Code Review; Tools; Integration & Validation; Software Quality Assurance; Software Maintenance; Automated Tools in Software Engineering.

Objectives

- Add a path from ignorance to knowledge.
- Teach fundamental principles and techniques used in the development of large software systems.
- Provide an opportunity to work on an industrially sponsored project in a team-environment.
- Teach teamwork and presentation skills.

At the end of the course, the students would be able to understand and apply Object Oriented Analysis and Design methods to develop good quality software systems, using the Unified Modeling Language (UML) and the Unified Process.

Syllabus:

Module 1 Introduction To Software Engineering and Process Models

1.1 Software Engineering-process framework, the Capability Maturity Model (CMM), Advanced Trends in Software Engineering

1.2 Prescriptive Process Models: The Waterfall, Incremental Process Models, Evolutionary Process Models: RAD & Spiral

1.3 Agile process model: Extreme Programming (XP), Scrum, Kanban

Module 2 Software Requirements Analysis and Modeling

2.1 Requirement Engineering, Requirement Modeling, Data flow diagram, Scenario based model

2.2 Software Requirement Specification document format(IEEE)

Module 3 Software Estimation Metrics

3.1 Software Metrics, Software Project Estimation (LOC, FP, COCOMO II)

3.2 Project Scheduling & Tracking

Syllabus: ...

Module 4 Software Design

Design Principles, Design Concepts, Effective Modular Design – Cohesion and Coupling
Architectural Design Component-level design User Interface Design

Module 5 Software Testing

5.1 Unit testing, Integration testing,Validation testing, System testing
5.2 Testing Techniques, white-box testing: Basis path, Control structure testing
black-box testing: Graph based, Equivalence, Boundary Value
5.3 Types of Software Maintenance, Re-Engineering, Reverse Engineering

Module 6 : Software Configuration Management, Quality Assurance and Maintenance

6.1 Risk Analysis & Management: Risk Mitigation, Monitoring and
Management Plan (RMMM).
6.2 Quality Concepts and Software Quality assurance Metrics, Formal Technical
Reviews, Software Reliability
6.3 The Software Configuration Management (SCM) ,Version Control and
Change Control

New Module

Software engineering in AI:

IEEE Software

Text book:

T1. Software Engineering by Rajib Mall

T2: Pressman, R.S., Software Engineering: A Practitioner's Approach, MGHISE, 7 th Ed. 2010

T3: Larman, C., Applying UML and Patterns: An Introduction to Object-Oriented Analysis & Design and the Unified Process, Pearson Education, 3 rd Ed., 2004.

Schedule:

Week 1 : Introduction
Week 2 : Life Cycle Models I
Week 3 : Life Cycle Models II
Week 4 : Requirements analysis and specification
Week 5 : Basics of software design
Week 6 : Procedural design methodology
Week 7 : Object-oriented concepts
Week 8 : Introduction to UML: Class and Interaction Diagrams
Week 9 : Object-oriented analysis and design
Week 10 : Testing I
Week 11 : Testing II
Week 12 : Version control

Evaluation Scheme

SR No	Component	Weightage %
1	Mid Sem x2	20
2	End Sem	30
3	Class Participation + Attendance	10
4	Surprise Quiz x2	10
5	Project	30

Project

Team Project: A complete live project is to be done using the Unified Process and the best practices of software engineering.

Use the same DBMS project and group members

Additional feature and update can be considered.

This would be focused on project management, reports and overall project.

Classes

Tuesday : 10 : 30 AM

Thursday : 9:30 - 11:30 AM

Google meet ID : hdu-pizh-cog

SE : Software Engineering Lecture

Tuesday, September 7 · 10:30 – 11:30am

Google Meet joining info

Video call link: https://meet.google.com/hdu-pizh-cog

SE Team

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And through moodle

Thank You
Get Vaccinated and Wear Mask