

10B11CI512: Software Engineering

Course Credit: 4

Semester: V

Introduction

To review and understand the software Process, software engineering models, Software engineering Practice, data flow diagrams, requirement engineering, object-orientation, understand analysis modeling, design engineering and architectural design, User interface Design and software testing strategies, learn ethical and social implications of computing and exposure to Professional software development tools and techniques.

Appreciate understanding the critical issues involved in software development and accordingly develop analysis and design strategies for tackling the core problems across various industry domains. This would be imparted through hands on exercises and case studies on some real-life and popular software engineering tools and technologies involving databases, CASE Tools, web servers and other web related tools and technologies (for a N-tier architecture) like Eclipse, Rational Rose, C++ / Java etc. through an Enterprise wide software project implementation in a specific domain area

In addition, provided that the student has reached an acceptable standard in the assessments and examinations, the student may then undertake a dissertation / industry project as part of his summer training module. Work on a dissertation / industry project for this course will normally involve an in-depth study in the area of distributed information systems and computing (e.g., a state-of-the-art review together with appropriate software development) and provides the student with an excellent opportunity to demonstrate expertise in this area to future employers or as a basis for future MS/PhD study.

Course Objectives (Post-conditions)

Knowledge objectives:

1. You will broaden your knowledge of Software Process Models.
2. You will become aware of the Software Product.
3. You will increase your proficiency in Software Project Management.
4. You will gain practical experience in Requirements Engineering.
5. You will gain practical experience in UML tools.
6. You will acquire the background of Software Architecture.
7. to understand and be able to explain Software Metrics and Software Reliability.
8. You will learn concepts associated with Software Construction.
9. You will learn about Software Verification

Application objectives:

1. Case Study based on Software life cycle.
2. to develop, implement, and demonstrate the learning through a project that meet stated specifications.
3. You will learn User Interface Design.
4. to understand Software Cost Estimation and web engineering.

Expected Student Background (Preconditions):

Computer Programming, Data Structures and Computer Architecture.

Topics Outline:

S NO	Topics	Hrs
1	Introduction and Overview of Software Engineering	2
2	Software Process	2
3	Agile Software Development	2
4	Requirement Engineering	3
5	System Modeling	2
6	Architectural Design	2
7	Design and Implementation	2
8	Software Testing	2
9	Software Evolution	2
10	Software Construction	1
11	Case Study	4
12	Applying Design Patterns	1
13	Aspect Oriented Software Development (AOSD)	2
14	Application Frameworks (Hibernate, Struts, Java EE and Spring Framework)	2
15	Model Driven Architecture (MDA)	3
16	Service Oriented Software Engineering	2
17	Software Metrics and Software Reliability	2
18	Software Cost Estimation	2
19	Software Project Management	2
20	Web Engineering (Capstone Module)	2
	Total	42

References

- R.S. Pressman, "Software Engineering: A Practitioner's Approach", 7Edition, McGraw Hill, 2010
- Sommerville, "Introduction to Software Engineering", 8Edition, Addison-Wesley, 2007
- Ghezzi, Jazayeri and Mandrioli, "Fundamentals of Software Engineering", 2Edition, Prentice-Hall, 2003
- Peters and Pedrycz, "Software Engineering: An Engineering Approach, John Wiley, 2004
- Len Bass, "Software Architecture in Practice", 2Edn. Addison Wesley, 2003
- Allamaraju, "Professional Java Server Programming", Apress, 2004
- Eric Gamma, "Design Patterns: Elements of Reusable OO Software", 1994
- James Goodwill, "Professional Jakarta Struts", John Wiley, 2004
- Ed Roman, "Mastering Enterprise Java Beans", Wiley, 2005
- Dirk Krafzig, Karl Banke, Dirk Slama, "Enterprise Service Oriented Architecture", Prentice Hall, 2004
- Russel Miles, "AspectJ Cookbook", O'Reilly, 2004

Craig Walls, Ryan Breidenbach, "Spring in Action", Manning, 2008
John Hunt, "Agile Software Construction", Springer, 2006
Rod Johnson, "Professional Java Development with the Spring framework", John-Wiley, 2005
Jos Warmer, "MDA Explained", Addison Wesley, 2003
Software Engineering related Journals by ACM / IEEE

Evaluation Scheme:

S.No	Examination	Marks
1	T-1	15
2	T-2	25
3	T-3	35
4	*Internal Marks	25

*Internal Marks Breakdown:

Assignments 9 marks (3x3)
Quizzes 12 marks (3x4)
Regularity 4 Marks