10M11CI213: Advanced Software Engineering

Course Credit: 3
Semester: M.Tech, I

Introduction

The knowledge seeker must understand 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 like Eclipse, JBoss, Tomcat, Rational Rose, C++ / Java etc. through an Enterprise wide software project Case Study.

Course Objectives (Post-conditions)
Knowledge objectives:

1. To review and understand the software Process
2. To emphasize improvement in software Quality
3. To review and understand various software architecture blueprints
4. To practice software reuse and adopt common design patterns.
5. To understand component based software development.
6. To understand test driven software development the agile way.
7. To study software metrics and cost estimation techniques
8. To learn Professional software development tools and techniques.

Application objectives:

1. To implement design patterns
2. Implementation of aspect-oriented programming (AOP).
3. Implementation of service-oriented architecture framework.

Expected Student Background (Preconditions)
Knowledge of Computer Programming, Data Structures and Computer Architecture.

Topics Outline:

S NO	Topics	Hrs
1	Review of Software Engineering	2
2	Process Improvement Framework	2
3	Software Architecture	4
4	Component based Software Engineering	3
5	Software Metrics and Cost Estimation	2
6	Applying Design Patterns	3

7	Aspect Oriented Programming (AOP)	4
8	Application Frameworks	3
9	Agile software Methodologies and Test Driven Development	5
10	Model Driven Architecture (MDA)	3
11	Service Oriented Software Engineering	5
12	Software Project Management	4
13	Web Engineering (Capstone Module.)	2
	Total	42

References

1. Pressman, “Software Engineering: A Practitioner's Approach”, 7Edition, McGraw Hill, 2010
2. Sommerville, “Introduction to Software Engineering”, 8Edition, Addison-Wesley, 2007
3. Ghezzi, Jazayeri and Mandrioli, “Fundamentals of Software Engineering”, 2Edition, Prentice-Hall, 2003
4. Peters and Pedrycz, “Software Engineering: An Engineering Approach, John Wiley, 2004
5. Len Bass, “Software Architecture in Practice”, 2Edn. Addison Wesley, 2003
6. Allamaraju, “Professional Java Server Programming”, Apress, 2004
7. Eric Gamma, “Design Patterns: Elements of Reusable OO Software”, 1994
8. James Goodwill, “Professional Jakarta Struts”, John Wiley, 2004
9. Ed Roman, “Mastering Enterprise Java Beans”, Wiley, 2005
10. Dirk Krafzig, Karl Banke, Dirk Slama, “Enterprise Service Oriented Architecture”, Prentice Hall, 2004
11. Russel Miles, “AspectJ Cookbook”, O’Reilly, 2004
12. Craig Walls, Ryan Breidenbach, “Spring in Action”, Manning, 2008
13. John Hunt, “Agile Software Construction”, Springer, 2006
14. Rod Johnson, “Professional Java Development with the Spring framework”, John-Wiley, 2005
15. 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