

# Academic Course Description

SRM University  
Faculty of Engineering and Technology  
Department of Software Engineering

## **SE2003 – Software Project Management** Second Semester, 2014-15 (Even semester)

### **Course (catalog) description:**

This course on Software Project Management highlights Software Project planning, quality, cost estimation, metrics, evaluation and management.

**Compulsory/Elective course:** Compulsory course

**Credit hours:** 4 credits

### **Relationship to other courses**

*Prerequisites* : Software Engineering Principles  
Overall knowledge of Software Project  
*Assumed knowledge* : Management  
*Following courses* : -

**Computer usage:** NIL

**Class schedule :** Four 50 minutes lecture sessions per week, for 12-15 weeks

### **Professional component**

General - Nil  
Basic Sciences - Nil  
Engineering sciences & Technical arts - 10%  
Professional subject - 90%

**Broad area :** To understand Software Project Models, Software Management Concepts, Software Quality Management, Software Metrics, Project and Cost Estimation,

### **Test Schedule**

S. No.	Test	Portions	Duration
1	Test-1	Session 1 to 4	2 Periods
2	Test-2	Session 1 to 12	3 Hrs

## Course objectives

1. Explore software project management activities from product concept through development based upon case studies and best practices.

## Course Learning Outcome

As a result of successfully completing this course, the student will understand the unique considerations of the software development life cycle that impact project management. More specifically, the student will learn about best practices in the field. As a result of this study, the student will be able to leverage templates and skills to become one of the top project managers in the latest methodologies available in software project management with core knowledge on the following

1. To understand Software Project Models and Software Management Concepts.
2. To understand the various methods of Cost Estimation.
3. To Study about Software Quality Management.
4. To Study about Software Metrics.
5. To understand Project Evaluation.

## Syllabus Contents

### **UNIT I-PROJECT CONCEPTS AND ITS MANAGEMENT (12 hours)**

Project life cycle models-ISO 9001 model-Capability Maturity Model-Project Planning-Project tracking-Project closure. Evolution of Software Economics – Software Management Process Framework: Phases, Artifacts, Workflows, Checkpoints – Software Management Disciplines: Planning / Project Organization and Responsibilities / Automation / Project Control – Modern Project Profiles

### **UNIT II-COST ESTIMATION (12 hours)**

Problems in Software Estimation – Algorithmic Cost Estimation Process, Function Points, SLIM (Software Life cycle Management), COCOMO II (Constructive Cost Model) – Estimating Web Application Development – Concepts of Finance, Activity Based Costing and Economic Value Added (EVA) – Balanced Score Card.

### **UNIT III-SOFTWARE QUALITY MANAGEMENT (12 hours)**

Software Quality Factors – Software Quality Components – Software Quality Plan – Software Quality Metrics – Software Quality Costs – Software Quality Assurance Standard – Certification – Assessment.

### **UNIT IV-SOFTWARE MANAGEMENT AND METRICS (12 hours)**

Software Configuration Management – Risk Management: Risk Assessment: Identification / Analysis / Prioritization – Risk Control: Planning / Resolution / Monitoring – Failure Mode and Effects Analysis (FMEA) – Defect Management – Cost Management. Software Metrics – Classification of Software Metrics: Product Metrics: Size Metrics, Complexity Metrics, Halstead's Product Metrics, Quality Metrics, and Process metrics.

#### **UNIT V-PROJECT EVALUATION AND EMERGING TRENDS (12 hours)**

Strategic Assessment–Technical Assessment–Cost Benefit Analysis–Cash Flow Forecasting–Cost Benefit Evaluation Technique–Risk Evaluation–Software Effort Estimation. Emerging Trends: Impact of the internet on project Management –people Focused Process Models.

#### **REFERENCES**

1. Ramesh Gopalaswamy , “*Managing and global Software Projects*”, Tata McGraw Hill Tenth Reprint, 2011.
2. Roger S.Pressman, “*Software Engineering- A Practitioner’s Approach*“, 7th Edition ,McGraw Hill, 2010.
3. Daniel Galin, “*Software Quality Assurance: from Theory to Implementation*”, Addison-Wesley, 2003.
4. Pankaj Jalote, “*Software Project Management in Practice*”, Pearson, 2002.
5. Stephen H. Kan, “*Metrics and Models in Software Quality Engineering*”, , Addison-Wesley, 2002.
6. Bob hughes and mike cotterell, “*Software project Management*” second edition,1999.
7. Royce, W. “*Software Project management: A Unified Framework*”, Addison-Wesley, 1998.
8. Demarco, T. and Lister, T. “*Peopleware: Productive Projects and Teams, 2nd Ed.*”, Dorset House,1999.
9. Fenton, N.E., and Pfleeger, S.L.. “*Software Metrics: A Rigorous and Practical Approach, Revised*” Brooks Cole, 1998.
10. Kaplan, R.S., Norton, D.P. “*The Balanced Scorecard: Translating Strategy into Action*”, Harvard Business School Press, 1996.
11. Boehm, B. W. “*Software Risk Management: Principles and Practices*” in IEEE Software, January 1991, pp32-41.
12. Grant, J.L. “*Foundations of Economic Value Added*”, John Wiley & Sons, 1997.
13. Cooper, R., “*The Rise of Activity-Based Costing- PartOne: What is an Activity-Based Cost System*” Journal of Cost Management, Vol.2, No.2 (Summer 1988), pp.45 – 54.

## Weekly Teaching Plan

Week No	Topics	Readings	Assignments
1	Project life cycle models-CMM -Project Planning, tracking, closure, Evolution of Software Economics	[Roger S.Pressman] Ch 2 [Ramesh Gopaldaswamy] Ch 3 [Daniel Galin] Ch 23 [Royce, W] Ch 2	
2	Process Framework Phases, Artifacts, Workflows, Checkpoints	[Royce, W] Ch 6, 9	
3	Software Management Disciplines : Planning / Project Organization and Responsibilities / Automation	[Royce, W] Ch 11, 12	Assignment 1
4	Problems in Software Estimation process and Function Points	[Royce, W] Ch 2 Constructive Cost Model	
5	SLIM, COCOMO – II, Estimating Web Application Development	[Royce, W] – Appendix - B	
6	Concepts of Finance, EVA, BSC	[Kaplan, R.S., Norton, D.P] Ch 7	Assignment 2
7	SQM - Software Quality Factors – Software Quality Components	[Ramesh Gopaldaswamy] Ch 7 [Daniel Galin] Ch 4	
8	Software Quality Plan – Software Quality Metrics – Software	[Ramesh Gopaldaswamy] Ch 7	Assignment 3

	Quality Costs	[Daniel Galin] Ch 6	
9	Software Quality Assurance Standard – Certification – Assessment.	[Ramesh Gopaldaswamy] Ch 7	
10	Software Configuration Management – Risk Management: Risk Assessment: Identification / Analysis / Prioritization	[Ramesh Gopaldaswamy] Ch 8	Assignment 4
11	Risk Control: Planning / Resolution / Monitoring – Failure Mode and Effects Analysis (FMEA) – Defect Management – Cost Management. Software Metrics	[Ramesh Gopaldaswamy] Ch 8 [Stephen H, Kan] Ch 2	
12	Classification of Software Metrics: Product Metrics: Size Metrics, Complexity Metrics, Halstead's Product Metrics, Quality Metrics, and Process metrics.	[Ramesh Gopaldaswamy] Ch 5 [Stephen H, Kan] Ch 4	Assignment 5
13	PROJECT EVALUATION - Strategic Assessment– Technical Assessment– Cost Benefit Analysis– Cash Flow Forecasting	[Pankaj Jalote] Ch 10	
14	Cost Benefit Evaluation Technique– Risk Evaluation	[Pankaj Jalote] Ch 10	Assignment 6

15	Software Effort Estimation. Emerging Trends: Import of the internet on project Management –people Focused Process Models.	[Ramesh Gopaldaswamy] Ch 15	
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**Evaluation methods**

Assignments	-	5%
Test – I	-	20%
Test - II	-	20%
Surprise Test	-	5%
Final exam	-	50%

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**Dated:** December 30, 2013

**Revision No.:** 01

**Date of revision:** June 23, 2014

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