

GUJARAT TECHNOLOGICAL UNIVERSITY

SOFTWARE PROJECT MANAGEMENT SUBJECT CODE: 2720211 SEMESTER: II

Type of course: Elective

Prerequisite: Programming, Databases, Preliminary knowledge of Software Engineering

Rationale: The course aims to provide an understanding management issues during software project management. It provides holistic views of different aspect of development process necessary for the management of the project which includes various activities, resources, quality, cost and system configuration etc. It also provides the student the understanding of software testing methods.

This course will enable the student to understand the issues related to design and development of good quality software, data gathering, and interpretation and learn the relevant techniques and quality models. The student will be able to use some software testing tools

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr No	Topics	Teaching Hrs	Module Weightage
1	Software Projects: Understanding Software Projects, Software Project management, Software Development Life cycle, Typical Software roles and responsibilities, Components, Review of Models for Software Development	02	05
2	Project Planning: Planning process, definition, estimation, testing strategy, team members, organization structure, database, capability baseline, quality objectives, Project Management Plan	04	10
3	Software Quality & Metrics: Understanding quality, definitions, attributes of measures, Metrics for different types of projects	04	10
4	Project Monitoring & Control: Project Control, effort data, Monitoring and Control, Quantitative techniques, Monitoring Process, Tools and techniques, Example of Monitoring, Data collection, Piloting	04	10
5	Configuration Management: Introduction, Process, Audit	03	05
6	Software Project Audit: Introduction, Quality, Quality Principles, Quality Attributes IT, Quality Assurance, Process Definition Life Cycle,	04	10

	Quality Audits, Quality Assurance vs Quality Control.		
7	Risk Management: Introduction, Risk management Process, Enterprise Risk database	03	05
8	Acquiring Software Projects: Outsourcing a project, processes involved in award of a project contract, best practices in writing a proposal, RFP, RFI, SOW	04	10
9	Benchmarking: Introduction, Types of benchmarking,	02	05
10	CMMI and SPM: Introduction, CMMI framework, Process area, levels of CMMI, Standard CMMI method for appraisal, CMMI adoption, CMMI vs CMM	04	10
11	Project Management in Maintenance Projects: Introduction, Software Project Maintenance Life Cycle, Process, estimation, Configuration management, Metrics, Defect prevention, Issues	03	05
12	Software Testing and Maintenance : Foundations of Testing, Test Planning, Test Design and Implementation, Testing Network Management Systems, Web Based Testing, Testing Object-Oriented systems, Test Execution and Measurement, Management Issues for Software Quality, Software Testing Types: Unit, Integration, & System, Benchmarking and Certification, Control flow & loop testing, Data-flow testing, Transaction-flow testing, Domain testing, Coverage vs. usage based testing, Software Reuse, Software Aging, Product Enhancement, Reverse Engineering, Re-engineering Method, Architectural Simplification	05	10
13	Software Testing Tools : Test case Generation Methodology, Study of various Testing Tools (Win Runner, Load Runner), Automatic Testing Tool	03	05

Reference Books:

1. Software Project Management, Sanjay Mohapatra, Cengage Learning
2. Software Project Management in Practice, Pankaj Jalote, Pearson
3. Project Management – Core text Book, Mantel “et al”., Wiley
4. Software Engineering: A practical Approach, Roger S. Pressman, McGraw-Hill
5. Software Testing Concepts and Tools, Nageswara Rao Pusuluri, DreamTech

List of Assignments/Practicals:

1. It will consist of case study based approach (Minimum 5), which covers various aspects of Software Project Management **or** one project with documentation which covers most of the aspects of SPM.
2. Study and use of at least 1 SPM tool.
3. Assignments (Minimum 3) on Software testing methods.
4. Study and use of at least 1 Software testing tools.

Major Equipment: Desktop, Laptop, Software testing tools

Open ended problems:

1. **Metrics Comparison:** Researchers have suggested many ways to measure the complexity and/or quality of software. A interesting project would be to take two or more metrics,

measure a number of software systems, and compare the measurements in an objective way. The difficult part of this study would be the evaluation method: How can we compare different software metrics? To come up with a sensible answer to this question, start with a deeper question: What do we want from our metrics?

2. You are integrating a bug reporting system with a configuration management tool to track bug reports, bug fixes, feature requests, and enhancements. You are considering an issue model for integrating these tools. Draw a class diagram of the issue model, the corresponding discussion, configuration management, and bug reporting elements.

List of Open Source Software/learning website:

- 1) <http://www.opensourcetesting.org/>
- 2) <http://www.onestoptesting.com/>
- 3) <http://opensource.com/business/14/1/top-project-management-tools-2014>

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.