GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3171609
SOFTWARE PROJECT MANAGEMENT
B.E. 7th Semester

Type of course: Elective

Prerequisite: Fundamentals of Software Engineering

Rationale: Today's world is a digital world driven by software of varying sizes and complexity. Understandably, the effectiveness and efficiency of the work done nowadays, primarily depends on the quality of the software(s) being employed. The quality of the software relies on the way it is managed during its development as well as maintenance.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Syllabus:

Sr. No.	Content	Total Hrs
1	**Introduction to Software Project Management (SPM):** Rationale, Software Projects Vs other types of Projects, Contract Management and Technical Project Management, Activities Covered by SPM, Plans, Methods and Methodologies, Categorizing Software Projects, Project Charter, Stakeholders, Setting Objectives, Project Success and Failure, Management Control, Project Management Life Cycle, Traditional versus Modern Project Management Practices.	4
2	**Project Planning:** Tasks in Project Planning; Work Breakdown Structures (WBS), Planning Methods, Selecting Project Approach, SDLC, Software Processes and Process Models, Choice of Process Models, A Generic Project Model, Software Cost Estimation; COCOMO Model; Budgeting.	6
3	**Project Scheduling, Monitoring & Control:** Scheduling Techniques, Program Evaluation and Review Technique (PERT), Gantt Chart, Critical Path Method (CPM), Automated Tools. Project Status Reporting; Project Metrics; Earned Value Analysis (EVA); Project Communication Plan & Techniques; Steps for Process Improvement.	7
4	**Risk Management:** Concepts of Risks and Risk Management; Risk Management Activities; Effective Risk Management; Risk Categories; Aids for Risk Identification; Potential Risk Treatments; Risk Components and Drivers; Risk Prioritization.	6
5	**Configuration Management:** Software Configuration Management (SCM) – Baselines, Software Configuration Items (SCI), SCM Process, Identification of Objects in the Software Configuration, Version Control, Change Control, Configuration Audit, Status Reporting, Goals of SCM.	4
6	**Quality Assurance:** Software Quality Assurance Activities, Software Qualities, Software Quality Standards – ISO Standards for Software Organization, Capability Maturity Model (CMM), Comparison between ISO 9001 & SEI CMM, Other Standards.	6

7	**Software Re-engineering:** Software Maintenance Problems, Redevelopment vs. Reengineering, Business Process Reengineering, Software Reengineering Process Model, Technical Problems of Reengineering.	6
8	**Project closure:** Project Closure Analysis, Case Study of Software Company's Project Closure Analysis Report.	3

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	15	30	20	15	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1) Bob Hughes and Mike Cotterell, "Software Project Management ", Tata McGraw Hill, 4th edition, 2006
2) Walker Royce, "Software Project Management", Pearson Education, 2005
3) Kieron Conway, "Software Project Management", Dreamtech Press, 2001
4) S. A. Kelkar, "Software Project Management", PHI Publication, 15th edition, 2013.
5) Roger S. Pressman , "Software Engineering – A Practitioner's approach", Tata McGraw Hill, 2009
6) Ramesh, "Managing Global software Projects", Tata McGraw Hill, 2001
7) Shailesh Mehta, "Project Management and Tools & Technologies – An overview", SPD, 2017

Course Outcome:

After learning the course, the students should be able to:

Sr. No.	CO Statement	Marks % Weightage
1	Describe and determine the purpose and importance of a software project and project management practices.	15%
2	Compare project approaches for given software project and identify risk factors.	20%
3	Estimate and evaluate project cost and schedules and determine risk management approaches.	25%
4	Define and evaluate quality assurance measures.	15%
5	Implement a project to manage project schedule, expenses and resources with	25%

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List of Experiments and Design based Problems (DP)/Open Ended Problem:

Case Study:

Stage 1:

Selection of case study topics and formation of small working groups of 3-5 students per group. Students engage with the cases, read through background material provided in the session and work through an initial set of questions to deepen the understanding of the case. Sample *Project closure analysis report* is given to the students to study.

Stage 2:

The groups are expected to perform closure analysis report for their own semester project

Stage 3:

Each group prepares a short 2 – 5 page report on their results and a 10 min oral presentation of their project closure analysis.

Apart from case student students will perform at the following exercises:

1. Prepare SRS for given software project
2. Compare SDLC models for the given project
3. Estimate project cost and prepare project schedule
4. Evaluate risk management approaches suitable for the project
5. Design test suite to ensure software quality

List of Open Source Software/learning website:

1. www.rspa.com/spi
2. www.sei.cmu.edus