

Name of Institute: INDUS INSTITUTE OF TECHNOLOGY & ENGINEERING (DEPARTMENT OF COMPUTER ENGINEERING)

Name of Faculty: Dr. Jay Dave

Course code: IT0709

Course name: Software Project Management

Pre-requisites: Programming, Databases, Preliminary knowledge of Software Engineering Credit points: 3

- L T P C
- 3 2 0 4

Offered Semester - 7th Sem

Course Coordinator

Full Name: Dr. Jay Dave Department with sitting location: 3rd Floor, Faculty Wing, Bhanwar Building, IITE - IU Telephone:9909599949 Email: jaydave.ce@indusuni.ac.in

Consultation times: 03.30 PM – 04:30 PM (Monday- Friday) 09.00 AM – 10.00 AM (Working Saturdays)

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives

The course aims to provide

- 1. An understanding management issues during software project management.
- 2. 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.
- 3. The understanding of software testing methods.
- 4. Understanding of the issues related to design and development of good quality software, data gathering, and interpretation and learn the relevant techniques and quality models



Course Outcomes (CO)

At the end of this subject, students should be able to:

- 1. Understand ethical issues related to software project management.
- 2. Apply this ethical knowledge in practical situations.
- 3. Understand how different management and development practices process quality.
- 4. Understand how different management and development practices affect software.

Course Outline

(Key in topics to be dealt)

Subject: Software Project Management								
Progra	m: B. Tech. Techno	in Inform blogy	ation		Semester: VII			
Teaching Scheme				Examination Evaluation Schem			ie	
Lecture	Tutorial	Practical	Credits	University Theory Examination	University Practical Examination	Continuous Internal Evaluation (CIE)- Theory	Continuous Internal Evaluation (CIE)- Practical	Total
3	2	0	4	40	40	60	60	200

Unit-1

[5]

Software Projects: Understanding Software Projects, Software Project management, Software Development Life cycle, Typical Software roles and responsibilities, Components, Review of Models for Software Development

Project Planning: Planning process, definition, estimation, testing strategy, team members, organization structure, database, capability baseline, quality objectives, Project Management Plan

Unit-2

Software Quality & Metrics: Understanding quality, definitions, attributes of measures, Metrics for different types of projects

Project Monitoring & Control: Project Control, effort data, Monitoring and Control, Quantitative techniques, Monitoring Process, Tools and techniques, Example of Monitoring, Data collection, Piloting

[10]



Configuration Management: Introduction, Process, Audit

Unit-3

Software Project Audit: Introduction, Quality, Quality Principles, Quality Attributes IT, Quality Assurance, Process Definition Life Cycle, Quality Audits, Quality Assurance vs Quality Control.

Risk Management: Introduction, Risk management Process, Enterprise Risk database **Acquiring Software Projects:** Outsourcing a project, processes involved in award of a project contract, best practices in writing a proposal, RFP, RFI, SOW Benchmarking: Introduction, Types of benchmarking

CMMI and SPM: Introduction, CMMI framework, Process area, levels of CMMI, Standard CMMI method for appraisal, CMMI adoption, CMMI vs CMM

Unit-4

[5]

Project Management in Maintenance Projects: Introduction, Software Project Maintenance Life Cycle, Process, estimation, Configuration management, Metrics, Defect prevention, Issues

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

Software Testing Tools : Test case Generation Methodology, Study of various Testing Tools (Win Runner, Load Runner), Automatic Testing Tool

Text Books

1. Software Project Management, Sanjay Mohapatra, Cengage Learning

2. Software Project Management in Practice, Pankaj Jalote, Pearson

Reference Books

- 1. Project Management Core text Book, Mantel "et al". Wiley
- 2. Software Engineering: A practical Approach, Roger S. Pressman, McGraw-Hill
- 3. Software Testing Concepts and Tools, Nageswara Rao Pusuluri, DreamTech

[10]



Method of delivery

Chalk, Board (Face to face lectures, self study material, Active Learning Techniques) Chalk

Study time

3 hours –Lectures 2 hours- Tutorial

(How many hours per week including class attendance)

CO-PO Mapping (PO: Program Outcomes)

Program Outcomes (PO's) Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.



PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO/PSO	РО									PSO				
СО	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	-		\checkmark	-	-	-	-	-	-	-	-	-	\checkmark	-
2	\checkmark		-	-	-	-	-	-	-	-	-	-	-	\checkmark
3	-	-	-		-	-	-	-	-	-	\checkmark	-	-	-
4	-	-	-		-	-	-	-	-	-	\checkmark	-	-	-

Mapping CO's with PO's and PSO's

1-Lightly Mapped 2- M

2- Moderately Mapped

3- Highly Mapped

Blooms Taxonomy and Knowledge retention (For reference) (Blooms taxonomy has been given for reference)





Tutorial work:

(Mention what practical work this Course involves) LIST OF TOPICS FOR STUDENT SEMINARS:

- 1. Various Process Models
- 2. Types of Requirements
- 3. Design Process
- 4. Black-Box and White-Box Testing
- 5. Software Quality Activities

CASE STUDIES / SMALL PROJECTS:

- 1: Analyze the problem and do project planning.
- 2: Identify project scope, objectives, and perform data modeling.
- 3: Identify the deliverables in various phases of SDLC.
- 4: Implement solutions using modern tools.
- 5: Explain test plan, perform validation testing, coverage analysis.

Perform above on the following:

- College Information System
- Super Market Automation System



- Restaurant Automation System
- Judiciary Information System
- Student Academic Record Management System
- Medicine Shop Automation
- Automobile Parts Shop Automation
- Quiz System
- ATM Systems
- Development of Computer Games
- Railway Ticket Reservation System
- Payroll Processing System
- Inventory System
- Library Management System
- Book Shop Automation System
- Text Editor

Lecture/tutorial times

Lecture01: Monday: 02:00 to 03:00 PM Lecture02: Tuesday: 12:20 to 01:20 PM Lecture03: Wednesday: 12:20 to 01:20 PM

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the Course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for mid and end semester examinations.

Details of referencing system to be used in written work

Text books

Text Books

- 1. Software Project Management, Sanjay Mohapatra, Cengage Learning
- 2. Software Project Management in Practice, Pankaj Jalote, Pearson

Reference Books

- 1. Project Management Core text Book, Mantel "et al". Wiley
- 2. Software Engineering: A practical Approach, Roger S. Pressman, McGraw-Hill
- 3. Software Testing Concepts and Tools, Nageswara Rao Pusuluri, DreamTech

Additional Materials



ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

 Example:
 Theory:

 Internal evaluation
 20% Objective (1-3-4)

 05 marks as attendance bonus for all students having attendance > 80%

 05 marks for presentation

 10 marks for assignment or case studies, limited to minimum 02 assignments per course

 Mid semester
 40% (due week 10)

 Final exam (closed book)
 40%

SUPPL EMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in mid semester or end semester will be considered for supplementary assessment in the respective components (i.e mid semester or end semester) of semester concerned. Students must make themselves available during the supplementary examination period to take up the respective components (mid semester or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

A report on the practical work is due the subsequent week after completion of the class by each group.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of 20% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.



Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.

Do not share your work with other students (except where required for a group activity or assessment)



Course schedule (subject to change)

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(Mention quiz, assignment submission, breaks etc as well in the table under the Teaching Learning Activity Column)

Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
Weeks 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	1	PPT
Weeks 2	Project Planning: Planning process, definition, estimation, testing strategy, team members, organization structure, database, capability baseline, quality objectives, Project Management Plan	2	PPT
Week 3	Software Quality & Metrics: Understanding quality, definitions, attributes of measures, Metrics for different types of projects	3	PPT
Week 4	Project Monitoring & Control: Project Control, effort data, Monitoring and Control, Quantitative techniques, Monitoring Process, Tools and techniques, Example of Monitoring, Data collection, Piloting	4	PPT
Week 5	ConfigurationManagement:Introduction, Process, Audit	4	Chalk, Board
Week 6	Software Project Audit: Introduction, Quality, Quality Principles, Quality Attributes IT, Quality Assurance, Process Definition Life Cycle, Quality Audits, Quality Assurance vs Quality Control.	2,3	Chalk, Board

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Week 7	Risk Management: Introduction, Risk management Process, Enterprise Risk database	3,4	
Week 8	AcquiringSoftwareProjects:Outsourcingaproject,processesinvolved in award of a project contract,best practices in writing a proposal,RFP,RFI,RFP,RFI,SOWBenchmarking:Introduction,Types of benchmarking	1,2	Chalk, Board
Week 9	Midsemester Exam		Chalk, Board
Week 10	CMMI and SPM: Introduction, CMMI framework, Process area, levels of CMMI, Standard CMMI method for appraisal, CMMI adoption, CMMI vs CMM	3	Chalk, Board
Week 11	Project Management in Maintenance Projects: Introduction, Software Project Maintenance Life Cycle, Process, estimation, Configuration management, Metrics, Defect prevention, Issues	4	Chalk, Board
Week 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	4	Chalk, Board
Week 13	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	4	Chalk, Board
Week 14	Software Reuse, Software Aging, Product Enhancement, Reverse Engineering, Re-engineering Method, Architectural Simplification	4	Chalk, Board
Week 15	Software Testing Tools : Test case Generation Methodology, Study of various Testing Tools (Win Runner, Load Runner), Automatic Testing Tool	4	Chalk, Board



