

## Software Project Development

<b>B. Sc. (Information Technology)</b>		<b>Semester – V</b>	
<b>Course Name: Software Project Development</b>		<b>Course Code: USIT501</b>	
<b>Periods per week (1 Period is 50 minutes)</b>		<b>5</b>	
<b>Credits</b>		<b>2</b>	
		<b>Hours</b>	<b>Marks</b>
<b>Evaluation System</b>	<b>Theory Examination</b>	<b>2½</b>	<b>75</b>
	<b>Internal</b>	<b>--</b>	<b>25</b>

### Course Objective:

- Understanding on the need for Software Project Management.
- Understanding the basic steps of project evaluation, planning.
- Understanding the basic steps of activity planning, risk management.
- Understanding the basic steps of controlling cost, managing contracts, managing people.
- Understanding how to work in team, maintaining quality and successfully closing the project.

Unit	Details	Lectures
<b>I</b>	<p><b>Introduction to Software Project Management:</b> Introduction, Why is Software Project Management Important? What is a Project? Software Projects versus Other Types of Project, Contract Management and Technical Project Management, Activities Covered by Software Project Management, Plans, Methods and Methodologies, Some Ways of Categorizing Software Projects, Project Charter, Stakeholders, Setting Objectives, The Business Case, Project Success and Failure, What is Management? Management Control, Project Management Life Cycle, Traditional versus Modern Project Management Practices.</p> <p><b>Project Evaluation and Programme Management:</b> Introduction, Business Case, Project Portfolio Management, Evaluation of Individual Projects, Cost–benefit Evaluation Techniques, Risk Evaluation, Programme Management, Managing the Allocation of Resources within Programmes, Strategic Programme Management, Creating a Programme, Aids to Programme Management, Some Reservations about Programme Management, Benefits Management.</p> <p><b>An Overview of Project Planning:</b> Introduction to Step Wise Project Planning, Step 0: Select Project, Step 1: Identify Project Scope and Objectives, Step 2: Identify Project Infrastructure, Step 3: Analyse Project Characteristics, Step 4: Identify Project Products and Activities, Step 5: Estimate Effort for Each Activity, Step 6: Identify Activity Risks, Step 7: Allocate Resources, Step 8: Review/Publicize Plan, Steps 9 and 10: Execute Plan/Lower Levels of Planning</p>	<b>12</b>

<p><b>II</b></p>	<p><b>Selection of an Appropriate Project Approach:</b> Introduction, Build or Buy? Choosing Methodologies and Technologies, Software Processes and Process Models, Choice of Process Models, Structure versus Speed of Delivery, The Waterfall Model, The Spiral Model, Software Prototyping, Other Ways of Categorizing Prototypes, Incremental Delivery, Atern/Dynamic Systems Development Method, Rapid Application Development, Agile Methods, Extreme Programming (XP), Scrum, Lean Software Development, Managing Iterative Processes, Selecting the Most Appropriate Process Model.</p> <p><b>Software Effort Estimation:</b> Introduction, Where are the Estimates Done? Problems with Over- and Under-Estimates, The Basis for Software Estimating, Software Effort Estimation Techniques, Bottom-up Estimating, The Top-down Approach and Parametric Models, Expert Judgement, Estimating by Analogy, Albrecht Function Point</p> <p>Analysis, Function Points Mark II, COSMIC Full Function Points, COCOMO II: A Parametric Productivity Model, Cost Estimation,</p> <p>Staffing Pattern, Effect of Schedule Compression, Capers Jones Estimating Rules of Thumb.</p>	<p><b>12</b></p>
<p><b>III</b></p>	<p><b>Activity Planning:</b> Introduction, Objectives of Activity Planning, When to Plan, Project Schedules, Projects and Activities, Sequencing and Scheduling Activities, Network Planning Models, Formulating a Network Model, Adding the Time Dimension, The Forward Pass, Backward Pass, Identifying the Critical Path, Activity Float, Shortening the Project Duration, Identifying Critical Activities, Activity-on-Arrow Networks.</p> <p><b>Risk Management:</b> Introduction, Risk, Categories of Risk, Risk Management Approaches, A Framework for Dealing with Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management, Evaluating Risks to the Schedule, Boehm’s Top 10 Risks and Counter Measures, Applying the PERT Technique, Monte Carlo Simulation, Critical Chain Concepts.</p> <p><b>Resource Allocation:</b> Introduction, Nature of Resources, Identifying Resource Requirements, Scheduling Resources, Creating Critical Paths, Counting the Cost, Being Specific, Publishing the Resource Schedule, Cost Schedules, Scheduling Sequence.</p>	<p><b>12</b></p>
<p><b>IV</b></p>	<p><b>Monitoring and Control:</b> Introduction, Creating the Framework, Collecting the Data, Review, Visualizing Progress, Cost Monitoring, Earned Value Analysis, Prioritizing Monitoring, Getting the Project Back to Target, Change Control, Software Configuration Management (SCM).</p> <p><b>Managing Contracts:</b> Introduction, Types of Contract, Stages in Contract Placement, Typical Terms of a Contract, Contract Management, Acceptance.</p> <p><b>Managing People in Software Environments:</b> Introduction, Understanding Behaviour, Organizational Behaviour: A Background, Selecting the Right Person for the Job, Instruction in the Best Methods, Motivation, The Oldham–Hackman Job Characteristics Model, Stress, Stress Management, Health and Safety, Some Ethical and Professional Concerns.</p>	<p><b>12</b></p>

<b>V</b>	<p><b>Working in Teams:</b> Introduction, becoming a Team, Decision Making, Organization and Team Structures, Coordination Dependencies, Dispersed and Virtual Teams, Communication Genres, Communication Plans, Leadership.</p> <p><b>Software Quality:</b> Introduction, The Place of Software Quality in Project Planning, Importance of Software Quality, Defining Software Quality, Software Quality Models, ISO 9126, Product and Process Metrics, Product versus Process Quality Management, Quality Management Systems, Process Capability Models, Techniques to Help Enhance Software Quality, Testing, Software Reliability, Quality Plans.</p> <p><b>Project Closeout:</b> Introduction, Reasons for Project Closure, Project Closure Process, Performing a Financial Closure, Project Closeout Report.</p>	<b>12</b>
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<b>Books and References:</b>					
<b>Sr. No.</b>	<b>Title</b>	<b>Author/s</b>	<b>Publisher</b>	<b>Edition</b>	<b>Year</b>
1.	Software Project Management	Bob Hughes, Mike Cotterell, Rajib Mall	TMH	6th	2018
2.	Project Management and Tools & Technologies – An overview	Shailesh Mehta	SPD	1st	2017
3.	Software Project Management	Walker Royce	Pearson		2005

**Course Outcome:**

After completing the course, the learner will be able to:

CO1: Describe the basic concepts of software project management with its life cycle

CO2: Apply project estimation and evaluation techniques to real world problem

CO3: Apply Key project management system techniques like PERT, CRM

CO4: Identify project risk, monitor and track project deadlines

CO5: Work in teams to evaluate the different modes of communication among people.