

Program : Diploma in Computer Engineering / Computer Hardware Engineering / Information Technology / Cloud Computing & Bigdata / Cyber Forensic and Information Security / Communication and Computer Networking	
Course Code : 5002	Course Title: Project Management and Software Engineering
Semester : 5	Credits: No Credit
Course Category: Common Course	
Periods per week: 4 (L:4 T:0 P:0)	Periods per semester: 60

Course Objectives:

- Impart the knowledge about software development phases.
- Provide an insight in developing a software product .

Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge in development of simple programs.		Object oriented programming language	4
		Programming in C	3

Course Outcomes:

On completion of the course, the student will be able to:

CO _n	Description	Duration (Hours)	Cognitive level
CO1	Illustrate life cycle phases and various models used in Software Development Process.	14	Understanding
CO2	Illustrate requirements, specifications, analysis and design approaches for the software development process.	17	Understanding
CO3	Explain coding, testing and maintenance phases during the software development process.	12	Understanding
CO4	Illustrate the planning and management of software projects using matrices and scheduling	15	Understanding
	Series Test	2	

CO-PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	2						
CO3	2						
CO4	2						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	Illustrate life cycle phases and various models used in Software Development Process.		
M1.01	Summarize the basic concepts of Software Engineering.	1	Understanding
M1.02	Explain the evolution of Software Engineering.	4	Understanding
M1.03	Describe Software life Cycle and its phases.	3	Understanding
M1.04	Describe Software Development Life Cycle (SDLC) Models.	6	Understanding
<p>Contents:</p> <p>Basic Concepts of software engineering and software development life cycle-Software Engineering-Definition-Importance- Software project types-Emergence of Software Engineering-Early Computer Programming- High level Language Programming- Control Flow based Design-, Data Structure oriented Design- Data Flow-oriented Design, Object-oriented Design- What Next-Other Developments.</p> <p>Software life Cycle-Definition-Phases-SDLC Models-Definition-Classifications-Comparison of SDLC Models-Classical Waterfall models- Iterative- Prototyping model-Spiral Model-Agile Model- V-Model</p>			
CO2	Illustrate requirements, specifications, analysis and design approaches for the software development process.		
M2.01	Explain requirements gathering phase.	2	Understanding
M2.02	Explain requirements analysis phase. .	2	Understanding
M2.03	Illustrate SRS document preparation and its	2	Understanding

	importance.		
M2.04	Explain software design phase.	2	Understanding
M2.05	Explain and compare cohesion and coupling.	3	Understanding
M2.06	Describe different approaches for software design.	4	Understanding
M2.07	Describe user interface design	2	Understanding
	Series Test – I	1	

Contents:

Requirements Gathering-Objective- Important requirements gathering ways-Requirement Analysis-Purpose, Requirement problem types-SRS Document-Users, Characteristics, Categories of requirements-Design-Issues associated with design, Classification of design activities-Characteristics of good design- Cohesion-Definition, Classifications. Coupling-Definition, Classifications-Design approaches-Function Oriented, Object Oriented Features and Concepts

User Interface Design-characteristics and types

CO3	Explain coding, testing and maintenance phases during the software development process		
M3.01	Explain the transformation of design phase into coding phase.	4	Understanding
M3.02	Outline good software development practice using different types of software documents.	4	Understanding
M3.03	Explain the testing phase to find all the defects in the software during each stage of the development process.	3	Understanding
M3.04	Explain the software maintenance phase to correct errors, enhance features, port to new platforms etc.	1	Understanding

Contents:

Coding-Objective- Coding Standards and Guide-lines,-Code Review- Code Inspection-Software documentation-Internal- External-Testing-Basic concepts and Terminologies-Mistake, Error, Failure

Classification of Testing-Unit testing- Integration testing- System testing-Unit testing-Concept

Integration Testing-Concept- Top-down approach- Bottom-up approach-System testing-Concept, Classification, Alpha, Beta, Acceptance Testing-Software Maintenance-Concept,

Types			
CO4	Illustrate the planning and management of software projects using matrices and scheduling approaches.		
M4.01	Explain software project management, its importance and complexities in software development.	1	Understanding
M4.02	Describe the responsibilities of project manager	2	Understanding
M4.03	Explain project planning for proper management of software.	2	Understanding
M4.04	Prepare the list of matrices for project size estimation	3	Understanding
M4.05	Write brief description about project estimation techniques for project planning	3	Understanding
M4.06	Describe project scheduling for project planning	2	Understanding
M4.07	Illustrate risk management during software development.	2	Understanding
	Series Test – II	1	
<p>Contents:</p> <p>Software Project Management-Purpose- Importance- Complexities-Project Manager-Job Responsibilities- Necessary skills for Managing Projects-Project Planning-Activities Metrics for project size estimation-LOC, Purpose-Project Estimation Techniques-Categories-Concept of Empirical, Heuristic and Analytical estimation techniques Project Scheduling-Steps- Introduce tool-Gantt Charts-Risk Management-Identification-Assessment,-Mitigation</p>			

Text / Reference:

T/R	Book Title/Author
T1	Fundamentals of Software Engineering: Rajib Mall, PHI Pvt. Ltd, Fourth Edition
T2	Software Project Management : Saikat Dutt /S. Chandramouli, Pearson-Second Edition
R3	Software Engineering, A Precise Approach: Pankaj Jalote, Wiley India-2010,Third edition
R4	Software Engineering: A Practitioner's Approach (Sixth Edition, International Edition). Roger S. Pressman. McGraw-Hill
R5	Software Engineering (Seventh Edition). Ian Somerville, Addison-Wesley,

R6	Project Management Absolute Beginner's Guide : Greg Horine , Pearson, Second Edition
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Online resources:

Sl.No.	Website Link
1	https://en.wikipedia.org/wiki/Software_engineering
2	https://infolab.stanford.edu/~burback/watersluice/watersluice.html
3	www.tutorialspoint.com › software engineering
4	https://swayam.gov.in/nd1_noc19_cs69/preview
5	https://nptel.ac.in/courses/106101061