Devi Ahilya University, Indore, India Institute of Engineering & Technology				III Year B.E. (Information Technology (Full Time)		
Subject Code & Name	**Instructions Hours per Semester & Credits**					
5RIPC2 **Software Engineering**	**Classroom Instruction (CI)**		**Lab Instruction (LI)**	**Term Work (TW) and Self Learning (SL)**	**Total no. of Hours Per semeste**	**Total Credits (Total Hours/30)**
Duration of Theory **Paper: 3 Hours**	**L**	**T**	**P**	**TW+SL**	**120**	**4**
	20	**10**	**20**	**70**		

Course Objectives

1. Introducing the importance of software engineering, best practices of software engineering..
2. Explaining the applications, development, maintenance and evaluation process of software systems
3. Illustrating the various diagrams, models for different phases of software engineering
4. Deliberation on various techniques for understanding and analysing requirements and developing architecture for software solutions
5. Understanding the various quality parameters, reverse engineering and re-engineering concepts and examples

Course Outcome:

Students earned credits will develop ability to

CO. No.	**CO.**	**PO.**
CO1.	Gaining the ability to discern and apply the principles, techniques, methodologies in software engineering.	PO1, PO2
CO2.	Gaining the knowledge of how to apply the software engineering concepts to real world scenarios.	PO1,PO2,PO3,PO6,PO10,PO12
CO3.	Acquiring the ability to understand the different concerns about analysis and design of cost effective, robust and reliable solutions in small scale and large scale software systems.	PO4,PO5,PO6,PO7,PO9
CO4	Grasping the role of testing , software quality and quality metrics for software solutions	PO3,PO4,PO5,PO9,PO11
CO5	Gaining the ability to utilize the knowledge acquired about forward, reverse, re-engineering and their applications	PO6,PO7,PO8,PO11

CO-PO Relationship

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO1	2	2										
CO2	2	2	3			3				3		3
CO3				2	3	3	2	3				
CO4			3	3	3				2		3	
CO5						2	2	3			3	

1. * CO (rows) mention nil/very small/insignificant contribution to the PO(column)
2. 1→ relevant and small significance 2 → medium or moderate and 3 →strong

COURSE CONTENTS

UNIT I

Software Engineering process, Technical System, Socio technical System, Legacy System, Software Process Model, Water Fall Model, Prototype Model, Incremental Model, Spiral Model, Agile Model, RUP model, Dev-ops

UNIT II

Software Process, Software Requirements, Requirements Analysis and Principles, Requirement Engineering Process, SRS, SDS, End-user requirements, System Models, UML, Static diagrams, Dynamic diagrams, Software Engineering best practices

UNIT III

Software Design Process, Design principles, Analysis Model, Design Model, Modularity, Abstraction, Functional independence, Decomposition and Organisation, Data Design, Architecture Design, Interface Design, Cohesion and Coupling

UNIT IV

Software Testing Fundamentals, Black Box Testing, White Box Testing, Grey Box Testing, Unit Testing, Integration Testing, System Testing, Acceptance Testing, Regression Testing, alpha and beta testing, Verification and Validation, Faults and Failures,

UNIT V

Forward Engineering, Reverse Engineering, Reengineering, Business Process Reengineering, Software Quality, Dependability, Software Quality Metrics, CMMI, Project planning, Risks and Risk Management

BOOKS RECOMMENDED:

[1] C.Gezzi, M. Jazayeri and D. Mandrioli, *Fundament of software Engineering*, 2 nd edition Pearson, 2002

[2] R.S. Pressman, *software Engineering A Practitioner Approach,* 7th edition, Mc Graw Hill International Edition 2009

[3] P.Jalote, Pankaj Jalote's Software Engineering: A Precise Approach, Wiley, 2010

[4] Ian Sommerville, S*oftware Enginering,* Pearson education, 10th edition, 2015