Software Engineering				Programming Fundamentals
	3	**0**	**2**	

Course Objective: 1. This course focuses on engineering practices and processes that development team uses to make sure the team is setup for change.
2. The course introduces practices, techniques and processes that can help team build high quality software.

S. NO.	Course Outcomes (CO)
CO1	Understand the fundamental concepts and need of software engineering
CO2	Develop a comprehensive understanding of principles, patterns, architecture and software components.

CO3	Apply principles and algorithms to understand Agile software development model.
CO4	Learn to critically evaluate the various tecsting techniques and test case generations.
CO5	Comfortably and effectively participate in various techniques and processes for building scalable and high quality software.

S. NO.	Contents	Contact Hours
UNIT 1	Introduction of Software Engineering: Need for software engineering, Software quality attributes, Software product pipelines, Software life cycle models and processes, Requirement engineering using UML Diagrams.	**9**
UNIT 2	Software Architecture and Design: Design principles, Design Patterns, Architecture Versus Design, Modularity,Software Components and Connectors, Architecture Styles.	**6**
UNIT 3	Essence of Modern Software Engineering: Software engineering essence, Essence language, Essence kernel, Using essence kernel in agile development practices, Agile Principles, Agile process models through essence kernel, Large scale complex development Using kernel	**13**
UNIT 4	Software Testing: Quality metrics, Coding style and Static analysis tools, Verification and validation ,Various testing techniques and Test case generations.	**7**
UNIT 5	Software Project Management: Software versioning and Continuous integration, Project management and Risk analysis, Configuration management, Cost analysis and estimation.	**7**
	TOTAL	**42**

REFERENCES		
S.No.	**Name of Books/Authors/Publishers**	**Year of Publication / Reprint**
1	R.S. PRESSMAN, B.R. MAXIM (2019), Software Engineering: A Practitioner's Approach, McGraw-Hill India, 2019, 9th Edition.	2019
2	Mark Richards, Neal Ford (2020), Fundamentals of Software Architecture, O'Reilly Media, Inc.	2020
3	L. BASS, P. CLEMENTS, R. KAZMAN (2012), Software Architecture in Practice, Pearson, 3rd Edition.	2012
4	I. JACOBSON, H. LAWSON, P.W. NG, P.E. McMAHON, M. GOEDICKE (2019), The Essentials of Modern Software Engineering, ACM Books.	2019

B.Tech. Information Technology		
	Course Structure	**Pre-Requisite**