GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology	Branch/Spec.	Computer Engineering/Information Technology
Semester	V	Version	2.0.0.0
Effective from Academic Year	2020-21	Effective for the batch Admitted in	July 2018
Subject code	2CEIT502	Subject Name	Software Engineering

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	-	4	Theory	40	60	100
Hours	3	0	2	-	5	Practical	30	20	50

Pre-requisites:

Concepts of Object oriented programming and algorithms

Objectives of the course:

1. Able to gain knowledge of different software development lifecycle models and able to apply it
2. Acquire knowledge of different analysis models and build according to software needs
3. Gain the understanding of different approaches of requirement gathering, analysis, and documentation
4. Get to know different coding and testing standards and methods to be used in industry for software projects

Theory syllabus

Unit	Content	Hrs
1	**Introduction to Software and Software Engineering:** FAQ about Software Engineering, Software characteristics, The Changing Nature of Software, Software Myths	03
2	**Process Models (Software Development Life Cycle):** What is Software Process? , What is Software Development Life Cycle (SDLC)? Prescriptive models, The water fall model (classical life cycle model), Incremental Process model, Evolutionary process model, The unified process	04
3	**Building the Analysis Model:** Requirement Analysis, Analysis Modelling Approaches, Data Modelling Concepts, Object Oriented Analysis, Scenario Based Modelling, Class Based Modelling, Creating a Behavioural Model, Flow Oriented Modelling, Entity Relationship Diagram (E-R diagram)	04
4	**Requirements Analysis and Specification or Requirement Engineering:** Requirement Engineering, Requirement Elicitation, Requirement Analysis, Requirement Documentation (SRS), Requirement Gathering and Analysis, Software Requirement Engineering	05
5	**Software Project Management:** Introduction, Responsibility of Software Project Manager, Project Planning Activities, Project planning, SPMP Document, Metrics for Project Size Estimation, Project Estimation Techniques, Scheduling	06
6	**Coding and Testing:** Coding Standards & Guidelines, Coding Review, What is Testing, Error- Faults-Failures, Test cases, Test suites, Verification versus Validation, Design of Test Cases, Alpha and Beta Testing, Testing in Small and Large Scale, Black Box Testing, White Box Testing (Structural Testing), Integration testing, System Testing	06
7	**Software Design**: Design Framework, Conceptual Design & Technical Design, Quality Attributes (FURPS) (Hewlett–Packard), Modularity, Strategy of Design, Function Oriented Design, Object Oriented Design Approach(OOD)	05
8	**Unified Modelling Language (UML):** Overview of object oriented concepts, Advantage of OOD, Unified modelling language(UML),	05

	UML diagrams, Use Case Diagram, Class Diagram, Sequence, collaboration Diagram, Activity Diagram, State chart Diagram	
9	**Function oriented software design:** Overview of SA/SD methodology Structured analysis, Data flow diagrams (DFDs), Structure design	03
10	**Advanced Topics in Software Engineering** Component-Based Software Engineering, Client/Server Software Engineering, Web Engineering, Reengineering, Computer-Aided Software Engineering, Software Process Improvement, Emerging Trends in software Engineering.	04

Practical content	
Experiments/Practical/Simulations would be carried out based on syllabus	
Text Books	
1	Software Engineering a practitioner's approach by Roger S. Pressman
Reference Books	
1	Software Engineering by Sommerville
2	Fundamentals of Software Engineering by Rajib Mall
3	Fundamentals of Software Engineering by K. K. Agrawal
4	Object–Oriented Modelling and Design with UML by Rumbaugh, Blaha
ICT/MOOCs Reference	
1	https://swayam.gov.in/nd2_cec20_cs07/preview

Course Outcomes:

After Successful completion of this course, student will be able to

1. Design the application of different SDLC models for different types of projects.
2. Develop and understand the application of different requirement models require for the any software
3. Gather, understand, analyse and document the software requirements
4. Manage the software project development by staffing, scheduling and estimation techniques
5. Implement and use certain coding and testing standards for their software projects
6. Understand the advance and emerging trends of software engineering