Faculty of Science and Technology
R.T.M Nagpur University, Nagpur
Syllabus for B.Tech. Fifth/Sixth Semester CT
Software Engineering and Project Management (TH)

Total Credits: 03	Subject Code: BTCT503T
Teaching Scheme : Lectures: 3 Hours/Week Tutorials: 0 Hours/Week Practical: 0 Hours/Week	Examination Scheme : Duration of University Exam: 03 Hrs. College Assessment : 30 Marks University Assessment:70 Marks

Course Objectives:

1. To provide an understanding of the working knowledge of the techniques for analysis, design, testing, estimating and quality management of large software development projects.

2. To develop an understanding of the working methods and procedures for software development that can scale up for large systems and that can be used consistently to produce high quality software at low cost with a small cycle time.

Course Outcomes: (Please follow Bloom's Taxonomy words in Course outcome)

After completing the course, students will be able to

1. Explain evolution and impact of Software Engineering and to demonstrate and compare different software development process models.

2. Explain Agile process model, System Engineering and to list and explain different steps in Requirement Engineering Process.

3. Understand, analyze and apply different analysis and design models in software development process.

4. To explain and compare different software testing strategies, types and their significance and to understand and apply the concept of Software Quality Assurance and estimation.

5. To estimate the quality metrics for process and product and to list and analyze different software risk management strategies, software quality management process and to understand Software Configuration Management.

Unit I (06 Hrs)

Introduction: Software Characteristics, Software Engineering,A Layered Technology, Software Process Framework, Software Process Models, Waterfall Model, Incremental Process Models, Evolutionary Process Models, , The Unified Process Model

Unit II (06 Hrs)

Agile Process Models, **System engineering and modeling Requirements Engineering:** Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management.

Unit III (08 Hrs)

Software Analysis & Design : Modeling Approaches, Data Modeling, Object, Oriented Modeling, Scenario Based Modeling, Flow Oriented Modeling, Class based Modeling, Behavioral Model. Design Engineering Concepts, Design Model, Pattern Based Software design, Design Concepts: Abstraction Architecture, pattern modularity, information hiding, design classes, refactoring.

Unit IV (08 Hrs)

Software Testing : Testing Fundamentals , Black Box Testing, White Box Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging.

Product metrics: Software quality**,** Quality Concepts, Software Quality Assurance , Metrics for Analysis & Design Models, Metrics for Source Code, Metrics for Testing & Maintenance.

Unit V (08 Hrs)

Metrics for process & Product: – Software measurement, Metrics for software quality, Project scheduling.

Risk management – Risk strategies, Software risks, Risk identification, Risk refinement, RMMM Quality Management, Software Reliability, Change Management, and Software Configuration Management

Text Books:

1.Software Engineering: A Practitioner's Approach (Sixth Edition),Roger Pressman (TMH)

2.Software Engineering (Ninth Edition), Ian Summerville (Pearson Education)

3. Software Engineering : Theory and Practice (Fourth Edition) – Pfleeger (Pearson Education)

Reference Books:

1. Software Engineering Schaum's Series (TMH)
2. Software Engineering for Students –(Fourth Edition) – Bell (Pearson Education)
3. The Unified modeling language