MARIS STELLA COLLEGE (AUTONOMOUS),VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science **Semester: VI**
Course Title: Software Engineering
Course Code: COMPC082
No. of Hours: 45 **Credits: 3**

Objectives

- To apply these basic theoretical principles to a group software development project.
- To provide students with theoretical knowledge and practical skills required in a knowledge-intensive and changing IT industry.
- To design and manage the projects, organizations and development teams.

Course Outcomes

CO1: Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.
CO2: Analyze and categorize the requirements into functional, non-functional, Domain, System and User requirements.
CO3: Develop designs that map the requirements of a software project.
CO4: Generalizing other Aspects; Project Management, Scheduling, Software measures & working in teams.
CO5: Categorizing and Compare different types of Testing.

UNIT – I **(9 Hrs.)**

THE SOFTWARE PROCESS

A Generic View of Process: Software Engineering- A layered Technology, A Process Framework, The Capability Maturity Model Integration (CMMI), Process Patterns, Process Assessment, Personal Software Process (PSP), Team Software Process (TSP).
Process Models: What is life cycle model?, Classical waterfall model, Iterative waterfall model, Incremental model, Prototyping model, Evolutionary model, Spiral model.

UNIT – II **(9 Hrs.)**

SOFWARE REQUIREMENT SPECIFICATION & ANALYSIS

Software Requirements: Functional and Non-Functional requirements, User Requirements, System Requirements.

Requirements Engineering Process: Feasibility Study, Requirements Elicitation and Analysis, Requirement Validation, Requirements, Requirements Management.

Analysis Model: Requirement Analysis, Analysis Modelling Approaches.

UNIT - III **(9 Hrs.)**

DESIGN CONCEPTS AND PRINCIPLES

Design Concepts and Principles: Design Process and Design Quality, Design Concepts, the Design Model, Software Architecture, Data Design.

Real-Time Software Design: System Design, Real-time operating Systems, Monitoring and Controlling Systems, Data Acquisition Systems.

UNIT IV **(9 Hrs.)**

SOFTWARE PROJECT MANAGEMENT

Software Measures: Software Measure and Software Measurement, Software Complexity Measures, Software Science Measures, Size Measure, Data Structure Measure, Logic Structure Measure, Information Flow Software Measure.

Estimation: Software Project Estimation, Empirical Estimation Models, Project Scheduling.

UNIT V **(9 Hrs.)**

TESTING

Software Testing: Taxonomy of Software Testing, Test Activities, types of Software Testing, Black box testing, White box Testing, Testing, Testing in small, Testing in large.

Testing Strategies: A Strategies Approach to software Testing, strategic Issues, Unit Testing, Integration Testing, Validation testing, System Testing, Re- Engineering.

Prescribed Books:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
5. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxfor University Press, New Delhi, 1996.
6. Pfleeger, "Software Engineering", Pearson Education India, New Delhi, 1999.
7. Carlo Ghezzi, Mehdi Jazayari and Dino Mandrioli, "Fundamentals of Software Engineering", Prentice Hall of India, New Delhi, 1991.