MCC 403   SOFTWARE ENGINEERING

Module-I   (12 hours)

Introduction: Evolution and impact of Software Engineering, Socio-technical Systems, Critical Systems, Software Processes, and Software Life cycle Models, Software Project Management.

Requirements & Specification: Software Requirements, Requirements Engineering Processes, Feasibility study, Requirements analysis and specification, System Models, Critical System Specification, Formal Specification.

Module-II   (14 hours)

Design and Analysis Aspects: Architectural Design – Cohesion and coupling, Abstraction, Data flow Oriented Design, Distributed Systems Architecture, Application Architectures, Object-Oriented Design, Real-time Software Design, User Interface Design and Usability Engineering.

Software Development: Rapid Software Development, Software Reuse: Design Patterns, Component Based Software Engineering (CBSE), Critical Systems Development, Software Evolution.

Implementation and Testing: Verification and Validation, Software Testing, Critical Systems validation.

Module-III   (14 hours)

Software Reliability and Quality Management: Musa's Reliability Model, Managing People, Software Cost Estimation— COCOMO Model, Quality Management, Process Improvement, Configuration Management, Software Maintenance, CASE Tools.

Modern Trends and Emerging Technologies: Humphrey's Capability Maturity Model, CMMI (Capability Maturity Model Integration), Agile software development, Extreme Programming (XP), Security Engineering, Service-oriented Software Engineering, Aspect-oriented Software Development.

Text Books:

1. Rajib Mall, "Fundamentals of Software Engineering", 2nd Edition, 2007, PHI Learning Pvt. Ltd. New Delhi.
2. Ian Sommerville, "Software Engineering", 8th Edition, 2007, Pearson Education Inc., New Delhi.

Reference Books:

1. Roger S. Pressman, "Software Engineering: A Practitioner's Approach", 7th International Edition, McGraw-Hill Education (Asia), Singapore.
2. Shari Lawrence Pfleeger, Joanne M. Atlee, "Software Engineering", 3rd Edition (2006) , Pearson Education, Inc. New Delhi.

3. Ben Shneiderman, Catherine Plaisant, "Designing the User Interface: Strategies for Effective Human-Computer Interaction", 4th Edition (2006), Pearson Education, Inc. New Delhi.
4. Pankaj Jalote, "Software Engineering", First Edition, 2009, Wiley India Pvt. Ltd., New Delhi.
5. Dines Bjørner, "Software Engineering: Volume-1, Volume-2 & Volume -3", Springer India Pvt. Ltd., New Delhi.