Software Engineering
MIE 112

Semester: First **Full Marks: 100**
Credit: 4 **Internal: 40**
Final Exam: 60

General Objectives:

- This course aims to give students both a theoretical and a practical foundation in software engineering including current and emerging software engineering practices and support tools.
- In the practical part, students will become familiar with the development of software products from an industry perspective.

Specific Objectives:

- To make students aware with software requirement and design issues,
- To make students learn about the software reuse, distributed s/w engineering and embedded s/w,
- To make students learn about the detailed verification and validation technique

Unit 1: Introduction. **8 Hrs**

Introduction to software engineering, Software processes, Agile software, development, Project management.

Unit 2: Software requirements. **8 Hrs**

Requirements engineering processes, System modeling, Software prototyping, Formal specification.

Unit 3: Software Design. **10 Hrs**

Architectural design, Distributed systems architectures, Object-oriented design, Real time software design, Design with reuse, User interface design.

Unit 4: Advanced Software Engineering. **10 Hrs**

Software reuse, Components -based software engineering, Distributed software engineering, Embedded software.

Unit 5: Verification and Validation. **10 Hrs**

Verification and validation planning, Software inspections, Clean room software development, Defect Testing, Integrating Testing, Object –Oriented testing, Testing workbenches, Critical system validation.

Unit 6: Software Quality and Quality Assurance. **8 Hrs**

Software cost estimation, Software Quality assurance planning, Software quality assurance process, Software quality attributes, Guidelines and checklists, Software safety

Unit 7: Evolution **6 Hrs**

Software Change, Software re-engineering, Configuration management.

References:

1. Software Engineering, " Ian Sommerville", ninth edition
2. Software Engineering Fundamentals, " Ali Behforooz and Frederick J. Hudson
3. Software Engineering: A Practitioner's Approach, "Roger S. Pressman