

**H. N. G. University , Patan**  
**M.C.A – Semester - II**  
**MCA-22: Software Engineering**

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**Unit: 1**

**[25%]**

**Introductory Concepts:** Historical perspective, Software myths.

The Process: Software process, Software process models - The waterfall model, Incremental process models, Evolutionary process models, Specialized process models.

**Design Methods:** Design principles, Design concepts, Effective modular design, Data design, Transform mapping, Transaction mapping.

**Unit: 2**

**[25%]**

**Verification, Validation and Testing :** Strategic approach to software testing, Test strategies for conventional software, Validation Testing, System Testing, The art of debugging, Black box Testing, White box Testing, Control structure Testing, Software Quality, Metrics for Analysis, Metrics for Design, Metrics for source code, Metrics for Testing, Metrics for maintenance.

**Unit: 3**

**[25%]**

**Project Planning and Risk management :** Software measurement, Project planning process, Software scope & Decomposition techniques, Empirical estimation model, Make/Buy decision, Reactive versus Proactive risk strategies, Software risks, Risk identification, Risk projection, Risk refinement, Risk mitigation, monitoring, and management, Safety risks and hazards, The RMMM plan.

**Unit: 4**

**[25%]**

**Software Quality Assurance :** Quality concepts, The quality movement, Software quality assurance, Software reviews, Formal technical reviews, Formal approaches to SQA, Statistical quality assurance, Software reliability, The SQA plan, Introduction to ISO standards, Software configuration management.

**Text Books:**

1. Pressman R.S: Software Engineering: A Practitioner approach, McGraw hill

**Reference Book:**

1. Sommerville I: Software Engineering, Addison Wesley