# BANGALORE UNIVERSITY
## SCHEME OF STUDY AND EXAMINATIONS
### FOR ME DEGREE COURSE IN SOFTWARE ENGINEERING

### FIRST SEMESTER

<table>
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<tr>
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<th>Code</th>
<th>Subject</th>
<th>No. of Hr. / week</th>
<th>Duration of Exams</th>
<th>Sessional Marks</th>
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<td>1.</td>
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### ELECTIVE LIST

- **Elective I**
  - 2K8MESE25.1 Advanced Computer Architecture
  - 2K8MESE25.2 Computer Networks and Protocols
  - 2K8MESE25.3 Data Mining and warehousing

- **Elective II**
  - 2K8MESE32.1 Advanced concepts in Operating System
  - 2K8MESE32.2 Application Development Using FOSS
  - 2K8MESE32.3 Software Construction and Design Patterns
First Semester M.E. in Software Engineering

2K8MESE11: Software Requirements and Estimation


Reference Books:

2K8MESE12: Object Oriented Modeling


The Unified process: use case driven, architecture centric, iterative and incremental. Use case driven process: why use case, capturing use cases, analysis, design, and implementation, testing. Architecture-centric process: Architecture, architecture description. Iterative incremental process.

Reference Books:
2K8MESE13: Advanced Data Structures and Algorithm Analysis


Reference Books:

2K8MESE14: Software Architecture

Introduction to architecture - The Architecture business cycle; what is Software Architecture; a case study in utilizing architectural structures. The architecting Process, cases of important architectures, describing architectures - Understanding Quality Attributes; achieving qualities: A case study in designing for high availability; designing the architecture, a case study in architecture for integrability, documenting software architecture, reconstructing software architectures.

Software architecture and UML - Introduction to roles of the software architect, software architecture and development process. A Case Study with UML for Software Architecture - An example system overview; UML overview; system context and domain analysis; component design and modeling; subsystem design; transaction and data design; process and deployment design

References:

2K8MESE15: Information Security


Reference Books:

2K8MESE16: Advanced Algorithms Lab


Second Semester M.E. in Software Engineering

2K8MESE21: Software Quality Assurance


Reference Books:

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### 2K8MESE22 Software Metrics


**Reference Books:**

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### 2K8MESE23 Data Storage Technology

Storage devices & I/O Subsystems, Traditional Backup devices, Disk arrays, Disk physical structure- components, properties, performance, and specifications, Tape drives, Hot spares, Storage I/O & Storage system connectivity protocols. Introduction to Networked Storage, Discussion of Direct Attached Storage (DAS), Storage Area Networks (SAN), Network Attached Storage (NAS) and Content Addressable Storage (CAS), Basic architecture, connectivity and management principles.

Introduction to Information availability, Business Continuity and Disaster Recovery Basics, Local business continuity techniques, Remote business continuity techniques, Disaster Recovery principles & techniques. EMC Products & tools – A Case study, Discussion of CLARiiON Architecture, Snap view, Mirror view, Power path and SANCOPY.

Storage Area Networks (SAN), SAN components & Building blocks, SAN software, data access over SAN. Fiber channel basics, protocols & connectivity. SAN topologies, Elements of SAN design, scalability, availability, performance, security, capacity, and manageability issues. Studies and critiques of existing SAN design scenarios (partial mesh, full mesh, core/edge, & tiered designs).

**Reference Books:**
1. Marc Farley Osborne, *“Building Storage Networks”*, Tata McGraw Hill, 2005

2K8MESE24 Software Process and Project Management


Project Tracking and Control, Defect Tracking, Issue Tracking, Status Reports, Milestone Analysis, Defect Analysis and Prevention Methods, Process monitoring and audit, Reviews, Inspections and Walkthroughs, Seven Core Metrics, Management indicators, Quality Indicators, Project Closure, Project Closure Analysis, Role of Closure Analysis in a project, Performing Closure Analysis, Closure Analysis Report, CCPDS-R Case Study and Future Software Project Management Practices.

Reference Books:
4. A Discipline to Software Engineering by Watts S. Humphrey Pearson Education
5. Software Project Management in Practice by Pankaj Jalote, Pearson Education
6. Software Project Management Readings and Cases by Chris Kemerer

2K8MESE25.1 Advanced Computer Architecture

Parallel computer models: The state of computing, Multiprocessors and multi computers, Multi vector and SIMD computers, Architectural development tracks. Program and network properties: Conditions of parallelism, Data and resource dependences, Hardware and software parallelism, Program partitioning and scheduling, Grain size and latency, Program flow mechanisms, Control flow versus data flow, Data flow architecture, Demand driven mechanisms, Comparisons of flow mechanisms


Memory Technology: Hierarchical memory technology, Inclusion, Coherence and Locality, Memory capacity planning, Virtual Memory Technology Backplane Bus System: Backplane

**Reference Books:**
2. J.P.Hayes, “Computer Architecture and Organization”; MGH.
3. Harvey G.Cragon,”Memory System and Pipelined processors”; Narosa Publication.
4. V.Rajaranam & C.S.RMurthy, “Parallel computer”; PHI.

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**2K8MESE25.2 Computer Networks and Protocols**


**Reference Books:**

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**2K8MESE25.3 Data Warehousing and Data Mining**

Data Warehousing, An Introduction to data ware housing and characteristics of a data warehouse, various aspects of data marts. On Line Analytical processing, OLTP and OLAP
Data Mining, From Data warehousing to Data Mining, Objectives of Data Mining, the Business context for Data mining, Process improvement, marketing and Customer Relationship Management (CRM), the Technical context for Data Mining, machine learning, decision support and computer technology. Data Mining Techniques and Algorithms, Process of data mining, Algorithms, Data base segmentation or clustering, predictive Modeling, Link Analysis, Data Mining techniques, Automatic Cluster Detection, Decision trees and Neural Networks.

Reference Books:
3. Jiawei Han and Micheline Kamber Data Mining: Concepts and Techniques, 2nd ed., March 2006.

2K8MESE26: Mini Project I

Design and Development of Applications using Rational Rose. Examination will be by Demonstration and Viva-Voce.

Third Semester M.E. in Software Engineering

2K8MESE31 Software Testing and Reliability


Continuous-Time Markov Chains, Birth-death process and models, non-birth-death processes, and Markov chains with absorbing states and stochastic reward nets, Networks of Queues.

Reference Books:
2. Kishor S. Trivedi Probability and Statistics with Reliability, Queuing and


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### 2K8MESE32.1 Advanced Concepts in Operating System


**Reference Books:**

2. Bernstein P A Hazallacos and Goodmani M, Concurrency Control and Recovery in Database systems, Addison Wesley Co.

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### 2K8MESE32.2 Application Development using FOSS


**Reference Books:**
3. The Business and Economics of Linux and Open Source, Martin Fink, Pearson Education, 2002

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**2K8MESE32.3 Software Construction and Design Patterns**


**Reference Books:**

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**2K8MESE34: Mini Project II**

Application of Software Life Cycle (Waterfall Model/Prototyping/Design/Testing) for Mini Projects. Examination will be by Demonstration and Viva-Voce.

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**2K8MESE33 and 2K8MESE41**

Each student should separately carry out the Dissertation work for two semesters (III and IV). The Preliminary work relevant to the dissertation like Literature Survey, Design and Development should be done III Semester. The completed project should be submitted in IV semester.