



Adama Science and Technology University
School of Electrical engineering and computing
Department of Computer Science and Engineering

Course Category M. Mandatory | Course Name Software Evolution and Maintenance
Course Code: Seng4203 | credit Hr. 3 | prerequisite: Fundamentals of Software Engineering (SEng2206)
Instructor: **Begna D.**

Synopsis: This course is an introduction to the main issues related to software systems aging and evolution. It examines some of the available methods and technologies for software reverse engineering and reengineering as well as some of the managerial and planning issues specific to software reengineering projects. This course explores the foundations of software maintenance by introducing several challenges linked to software evolution along with support tools to approach them

Course Learning Outcome (CLO): At the end of the course the student will be able to do:

- CLO1** ▪ Explain the basic concept of software Evolution and Maintenance
- CLO2** ▪ Apply software maintenance fundamentals, including terminology; the nature of and need for maintenance; maintenance costs; evolution and categories of maintenance
- CLO3** ▪ Analyze key issues in software maintenance, to include technical issues; management issues; cost estimation; and software maintenance measurement
- CLO4** ▪ Apply the best practices maintenance process
- CLO5** ▪ Explain the concept of reverse Engineering
- CLO6** ▪ Explain the concept of software administration and performance.

Contents

Chapter 1: Fundamentals of Software Maintenance and Evolution

Definition and methodology
Nature of Maintenance
Need for Maintenance
Maintenance Cost
Evolution of Software
Categories of Software

Chapter 2: Issue in Software Maintenance and Evolution

2.1 Technical Issue
2.2 Management Issue
2.3 Maintenance cost Estimation
2.4 Software Maintenance cost Estimation

Chapter 3: Reverse Engineering

3.1 Definition
3.2 Reuse and Reusability
3.3 Maintenance measures

Chapter 4: Configuration Management

4.1 Configuration management
4.2 Change Control
4.3 Management and organizational issues
4.4 Management responsibilities
4.5 Documentation

Chapter 5: Building and Sustaining Maintainability

5.1 Maintenance tools: Criteria for selecting tools, taxonomy of tools
5.2 Quality Assurance,
5.3 Configuration management
5.4 Program understanding and reverse engineering testing

Chapter 6: Software Administration

6.1 System logs, updates, patches, and configuration changes,
6.2 backups. Installing and configuring hardware and software.

6.3 System performance tuning. Performing routine audits of systems and software.

6.4 Backup

Assessments

Assessments(Assignments,Mid Exam,Quizzes) 60%	Final Exam (40%)	Total	100%
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References

1. Software evolution and maintenance : a practitioner's approach / Kshirasagar Naik , John Wiley & Sons, 2015 2. Armstrong A Takang and Penny A.Grubb, —Software Maintenance: concepts and Practicell, International Thomson Computer press, London. 3. Roger S Pressman, —Software Engineeringll, 6th edition, Tata McGrawHill, 2004.
