SE4001 Software Re-engineering

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Course Content

This course explains and applies best practices to analyze and understand existing software systems; Use heuristics and tools to detect shortcomings in the design and implementation of software systems; Apply tests and re-factoring techniques to systematically remove the shortcoming and forward engineering techniques to re-build the software for fitness of purpose.

Course-Level Learning Outcomes

At the end of the course the students will be able to:

CLO: 1. Explain the concepts and technique of software reengineering.

CLO: 2. Apply reengineering techniques to maintain and modify software systems.

CLO: 3. Analyze and understand maintenance related problems associated with object-oriented software systems.

CLO: 4. Able to perform complex design reengineering and reverse engineering problems

Textbooks and Course Materials

Title: Re-engineering Software: How to Reuse Programming to Build New State-of-the-Art software
Author: Roy Rada

Title: Software Evolution and Maintenance: A Practitioner's Approach
Author: Priyadarshi Tripathy, Kshirasagar Naik

Marks Distribution

Assessment Type	Weightage
Sessional I:	15%
Sessional II:	15%
Finals:	50%
Assignments + Project:	10%
Quizzes:	10%

Tentative Tools and Technologies

- OpenOME
- Eclipse
- Git-Hub
- Jira
- Jenkins
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Class Policy & Etiquette

- Zero tolerance plagiarism policy will be adopted; All involved will be penalized.
- Attendance will be marked in the first five minutes of class. A student must maintain at least 80% of attendance to appear in final exams.
- No chewing of bubble gums.
- Cell phones strictly prohibited during classes and labs. Electronic devices must be turned off and placed in your bags (not on the desk just in front of you).
- Headphones should be removed all the time.
- During lectures, students must turn off their monitors and take notes. Using the computer during lectures without authorization is strictly not allowed.
- Persistent talking, whispering or any disruptive attitude will not be tolerated.
- No disrespect at all.

Tentative Week wise Course Content

Week no	Week Topics & Homework
1	**Introduction to Software Re-engineering & Course outline discussion**
2	**Software Evolution**
3	**Legacy Systems**
4	**Bad Smells**
5	**Re-Engineering techniques**
6	**SESSIONAL 1 (one week + -)**
7	**Reverse Engineering**
8	**Refactoring with respect to Design**
9	**Refactoring with respect to Code**
10	**Re-engineering Patterns**
11	**SESSIONAL 2 (one week + -)**
12	**Code Restructuring**
13	**Tools support for Re-engineering Activities**
14	**Software Quality Issues in re-engineering activities**
15	**Forward Engineering and maintenance**
16	**FINAL EXAM**