

**Technische Universität Dresden
Institut für Software und Multimediatechnik
Lehrstuhl Softwaretechnologie**

**Software Engineering - Software Reengineering
Summer semester 2014**

Referent: Harry M. Sneed (MPA)

Lecturing Schedule

Time and Rooms see Website!

Wednesday, 18th June: : Software Analysis

- 01. Lecture: Introduction to Software Reengineering (RENG)
- 02. Lecture: Accumulating Technical Debt (DEBT)

Thursday, 19th June: Software Reverse Engineering

- 03. Lecture: Software Re-Documentation (REVE)
- 04. Lecture: Software Evolution Modelling (EMOD)

Friday, 20th June: Software Migration Planning

- 05. Lecture: Reengineering Strategies (OMIG)
- 06. Lecture: Reengineering Cost Estimation (COST)

1st Exercise: Reverse Engineering existing COBOL and Java Source Modules.

Wednesday, 25th June: Procedural Reengineering

- 07. Lecture: Procedural Reengineering of Legacy Code (REST)
- 08. Lecture: Program Downsizing (DOWN)

Thursday, 26th June: Object-oriented Reengineering

- 09. Lecture: Object-oriented Code Refactoring (REFA)
- 10. Lecture: Java Code Renovation (JAVA)

Friday, 27th June: Data Reengineering

- 11. Lecture: Database Renovation (REDAT)
- 12. Lecture: Data Reverse Engineering (DREV)

2nd Exercise: Restructuring COBOL code and refactoring JAVA Code

Wednesday, 02nd July: Wrapping Legacy Code

- 13. Lecture: Software Wrapping (WRAP)
- 14. Lecture: Wrapping COBOL as Web Services (COB2WS)

Thursday, 3rd July: Creating Web Services from Legacy Code

- 15. Lecture: From COBOL to BPM (COB2BPM)
- 16. Lecture: From JAVA to BPEL4WS (JAV2WS)

Friday, 4th July: Applying Wrapping Techniques

- 17. Lecture: User Interface Wrapping with XML (GUIS)
- 18. Lecture: Data Base Wrapping Techniques (XMI)

3. Exercise: *Automated Wrapping of a COBOL and a Java Program*

Wednesday, 9th July: Transforming Legacy Code

- 19. Lecture: Transforming COBOL Code to OO-Code (COB2JAV)
- 20. Lecture: Transforming PLI Code to OO-Code (PLI2JAV)

Thursday, 10th July: Service-Oriented Migration

- 21. Lecture: Migrating to Service-Oriented Systems (SOAM)
- 22. Lecture: Migrating to Web Services (MIG2WS)

Friday, 11th July: Tools for Software Reengineering

- 23. Lecture: Web Service Migration Tools (TOOLS)
- 24. Lecture: The Sneed Reengineering Tools (CodeRedo, CodeTran, CodeWrap, CodeTest)

4th Exercise: *Automated Conversion of a COBOL and a PLI program to Java*

Tools: students will receive the following reengineering tools to perform the exercises:

- SoftRedoc for redocumenting existing source code
- SoftRedo for restructuring and refactoring procedural and OO-Code
- SofReuse for wrapping object-oriented Code
- CodeWrap for wrapping procedural Code
- CodeTran for transforming procedural to object-oriented Code

Exam: All students will be requested to write a short paper in English language on the purpose of software reengineering, summarizing the results of the exercises and comparing the costs with the benefits of various migration strategies. The exam grade accounts for 60% of the final grade. The other 40% is determined by the exercise grade.

Exercises: Students will create teams of 2-3 persons. Every week each team has one of the four reengineering exercises to solve and to submit the reengineered results by the following Friday to the instructor. The grade for the team is inherited by all members of that team. Exercise results should be sent to the following email address:

Harry.Sneed@t-online.de

Docent: Harry Sneed is currently working as a tester and auditor for the ANECON GmbH in Wien & Dresden. In addition, he is teaching Software Engineering for Wirtschaftsinformatiker at the University of Regensburg, Software Maintenance, Test and Measurement for Phd students at the University of Szeged, Software Evolution and Product Management for the Fachhochschule Hagenberg as well as Software Measurement and Test Automation for the Fachhochschule Wien. He has worked for over 40 years in the IT field, written 22 books and published more than 400 articles.

Seminar Material: Circa 24 power-point foils for each of the 24 topics plus the 4 exercises with 4 reengineering objects. To this comes a self-study check list of 240 questions on the subject of software reengineering. This material will be made available to the students on the Moodle server. In addition students are given a copy of the book “Softwaremigration” by Harry Sneed and Ellen Wolf. As supplementary literature, the following books from Harry Sneed are recommended:

- Sneed, H.: Software Sanierung, Rudolf Müller Verlag, Köln, 1990
- Sneed, H.: Objektorientierte Software Migration, Addison-Wesley Verlag, Bonn, 1999
- Sneed, H./ Sneed, S.: Web-basierte Systemintegration, Vieweg Verlag, Wiesbaden, 2003
- Sneed, H.: Wolf, E., Softwaremigration, dpunkt Verlag, Heidelberg, 2010