

METU Department of Computer Engineering
CENG 350 Software Engineering
Spring 2014-2015

Instructors:

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Catalogue description: Software lifecycle processes, including specification, design, construction, testing and evolution. Software process models. Modeling of computer-based systems. Software quality assurance. Software engineering standards. Professional and ethical responsibilities of software engineers.

Course learning outcomes: The students will gain an understanding of the foundations of the software engineering discipline for developing and maintaining computer-based systems. The students will be exposed to the life-cycle processes, modeling techniques, quality concepts, testing methods, standards, and ethical and professional responsibility.

Prerequisite: CENG 213

Background: Object-oriented programming.

Textbook:

Ian Sommerville, *Software Engineering*, Pearson, 2011, 9th edition.

References: UML resources, IEEE Software Engineering Standards, Software Engineering Code of Ethics and Professional Practice (SECEPP), World Intellectual Property Organization (WIPO) brochures on intellectual property rights (IPR).

Course Outline:

- Introduction [1,10] (week 1)
- Process [2-3] (weeks 2-3)
- Requirements [4-5] (weeks 4-5; week 6: overview and midterm-1)
- Design [6-7] (weeks 7-8)
- Testing [8] (week 9; week 10: overview and midterm-2)
- Quality [11,24] (weeks 11-12)
- Evolution [9] (week 12)
- Professional Issues (week 13)
- Wrap-up (week 14)

Grading:

Midterms	30%
Project	30%
Attendance	10%
Final Exam	30%

You must get at least a total of 60 points (out of 200) from the midterms to obtain the right to sit for the final exam.

Software Engineering Project

The project asks you to construct the requirements specification and the design for the software for BISIM, an information system in operation for bicycle sharing in the city of İzmir. You are expected to follow good engineering practices, including object-oriented analysis and design, and apply related standards.

The application is accessible from <http://www.bisim.com.tr>

You are encouraged to propose new, useful features; then, of course, your design must provide a solution to realize them. The project work does not require implementation.

Delivery Schedule:

Week 7: Software requirements specification (SRS) (ISO-IEC-IEEE 29148-2011) [12%]

Week 12: Software design description (SDD) (IEEE 1016-2009) [18%]

Rules:

- You may work with a partner.
- Delivery medium: Paper and COW (both).
- Diagramming standard is UML 2.0. Your UML diagrams should be importable by StarUML.
- Software Engineering Code of Ethics and Professional Practice is to be observed.

Detailed Schedule (tentative)

Midterm-1 (Process,Requirements): March 27, 17:40-19:10

Project (SRS): April 6, 16:30

Midterm-2 (Design,Testing): April 24, 17:40-19:10

Project (SDD): May 11, 16:30

Final Exam: TBA

Sommerville chapters

Although the current edition of Sommerville, edition 9, is officially our textbook, if you have the previous edition it will serve just as well. (The edition 10 will be out later in the year, so we will not be able to use it this semester.)

Here is the correspondence of the covered chapters:

edition 9	edition 8
1	1
2	4
3	17
4	6-7
5	8
6	11
7	14
8	23
9	21
10	2
11	3
24	27

Free Resources on the Web

Web page for the textbook:

<http://ifs.host.cs.st-andrews.ac.uk/Books/SE9/>

Software Engineering Code of Ethics and Professional Practice:

<http://www.acm.org/about/se-code>

IEEE Standards:

<http://ieeexplore.ieee.org/xpl/standards.jsp>

StarUML:

<http://staruml.sourceforge.net/en/>

UML tutorials:

<http://www.sparxsystems.com/uml-tutorial.html>

<http://www.tutorialspoint.com/uml/>

<http://edn.embarcadero.com/article/31863>

Design Patterns:

<http://pages.cpsc.ucalgary.ca/~kremer/patterns/>

Agile Software Development:

<http://agilemanifesto.org/>

<http://agilemethodology.org/>

The Risks Digest, forum on risks to the public in computers and related systems, moderated by Peter G. Neumann:

<http://catless.ncl.ac.uk/Risks/>

WIPO (World Intellectual Property Organization) page on basics of IP:

<http://www.wipo.int/about-ip/en/index.html#ip>

Dilbert, by Scott Adams:

<http://www.dilbert.com/>