



**Philadelphia University  
Faculty of Engineering  
Department of Computer Engineering  
First Semester, 2008/2009**

**Course Syllabus**

<b>Course Title:</b> Reverse Engineering	<b>Course code:</b> (610307, 630307, 650307)
<b>Course Level:</b> Fourth Year	<b>Course prerequisite:</b> Engineering Skills (640306)
<b>Class Time:</b> 9:10-10:10	<b>Credit hours:</b> 3

**Academic Staff**

**Specifics**

<b>Name</b>	<b>Rank</b>	<b>Office Number / Location</b>	<b>Off. Hs</b>	<b>E-mail Address</b>
<b>Dr. Mohammed Bani Younis</b>	<b>Assistant Professor</b>	<b>E725</b>	<b>10:00-11:00 S-T-R 11:15-12:15 M-W</b>	<a href="mailto:mbaniyounis@philadelphia.edu.jo">mbaniyounis@philadelphia.edu.jo</a>

**Course description:**

Reverse Engineering (RE) has become an important Engineering task to obtain knowledge about engineering device or system. RE is an effective learning technique if other “solutions” are available on the market. Applying reverse engineering methodologies allow engineers to disassemble and re-assemble of the device, taking care to document, test, analyze and report on the study of its function. This course Introduces students to Reverse Engineering Methodology through practical projects.

**Course objectives:**

After the completion of this course, students should be able to:

- Understand the Reverse Engineering (RE) Methodology
- Disassemble products and specify the interactions between its subsystems and their functionality
- Understand Computer-Aided RE and Rapid Prototyping Technology
- Re-draw electrical schematics from available PCBs
- Understand RE applications in software engineering



## Assessment instruments

- Project work including technical report
- First and second exam
- Final examination: 50 marks

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
First examination	<b>15</b>
Second examination	<b>15</b>
Project work (divided into three tasks including final report)	<b>20</b>
Final examination	<b>50</b>
Total	<b>100</b>

## Documentation and academic honesty

This course is given from the references provided. It is copyright protected. These references are abstracted in a form of power point presentations. The students are provided with this material in a printed form. The Students are also advised to avoid plagiarism during different home works and Project assignments.

## Course academic calendar

Feb 15	<b>Introduction</b>
Feb 22	<b>Forward Engineering Design (Class Notes)</b> Design Thought and Process, Design Steps, Mechatronic Systems Design
March 1	<b>System RE (Book Reference 1, Handout #1)</b> RE Methodology, RE Steps, System level Design, and Examples
March 8	Product Development (Chapter 1), Product Functions (Chapter 5)
March 15	Product Teardown (Chapter 6)
March 22	Engineering Specifications (Chapter 7)
March 29	Product Architecture (Chapter 9), <b>Exam I</b>
April 5	<b>Mechanical RE (Book References 2, Handout #2, RP Paper)</b> Computer-Aided RE (Chapters 1 and 2)
April 12	Rapid Prototyping (Chapter 5)
April 19	<b>Electronic RE (Handout #3, Handout #4, PCB Paper)</b> Identify electronic components, PCB RE
April 26	Schematic Drawings and Analysis, <b>Exam II</b>
May 3	Verilog and VHDL
May 10	<b>S/W RE (Book Reference 3, Handout #5)</b> Intro to Formal Methods & Software Engineering Methods
May 17	Reverse Engineering in Computer Applications
May 24	Re-engineering of PLC programs
May 31	<b>Final Exams</b>

Project works and reports are in due dates assigned to the students in advance.

**Expected workload:**

On average students need to spend 2 hours of study and preparation for each 50-minute class. The students are expected to give more time for the project work on an average of one working per project assignment.

**Attendance policy:**

Absence from classes shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

**Course references:**

1. Product Design: Techniques in Reverse Engineering and New Product Development by K. Otto and K. Wood Prentice Hall, 2001.
2. Reverse Engineering: An Industrial Perspective by Raja and Fernandes. Springer-Verlag 2008
3. Reverse Engineering in Computer Applications. MIT Lecture Notes 2001
4. RE as necessary phase by rapid product development by Sokovic and Kopac. Journal of Materials Processing Technology 2005
5. A Rapid Prototyping Methodology for Reverse Engineering of Legacy Electronic Systems by Deno, Landis, Hulina, and Sanjay IEEE International Workshop on Rapid System Prototyping, 1999.