



Philadelphia University

Faculty of Engineering - Mechatronics Engineering Department
First Semester 2019/2020

Course Title:	Reverse Engineering (0620437)
Prerequisite:	Engineering Skills
Class Time	Sun/Tues/Thurs 12:10 □ 1:00pm
Credit Hours:	Three credit hours (16 weeks per semester, approximately 45 contact hours)
Textbook:	Product Design: Techniques in Reverse Engineering and New Product Development by Otto and Wood. PE 2011
References	1. Reverse Engineering: Mechanisms, Structures, Systems & Materials by Robert Messler 2013 3. Reverse Engineering by R. Hinrichs 2015 4. Reverse Engineering: An Industrial Perspective by Raja and Fernandes. 2008 4. Reversing: Recent Advances and Applications Edited by A. Teila 2012
Description:	The course is a requirement for level 4th level engineering students. It introduces students to Reverse Engineering Methodology through practical case studies and class projects.
Website:	http://www.philadelphia.edu.jo/academics/aateyat/page.php?id=36
Instructor:	Ahmed Ateyat, MSc
Email:	aateyat@philadelphia.edu.jo
Office:	Mechanical & Mechatronics Engineering building, room 209. ext: 2134
Office hours:	Sun, and Tue: 10:00 – 12:00pm

Course Learning Outcomes with reference to ABET Student Outcomes

Upon successful completion of this course, student should:

1.	Understand the Reverse Engineering (RE) Methodology	[1, 7]
2.	Compare forward design with re-engineering	[1, 7]
3.	Analyze product functions and Evaluate their performance	[2, 6]
4.	Disassemble products and specify interactions among subsystems and their functionality	[1, 6, 7]
5.	Understand Computer-Aided RE and Rapid Prototyping Technology	[1, 6, 7]
6.	Know the latest technologies used in RE for PCBs	[2,7]
7.	Understand RE applications in software engineering	[6, 7]
8.	Understand professional and ethical responsibilities regarding RE	[4]
9.	Apply RE methodologies in a multi-disciplinary within a team environment	[3, 5]
10	Write technical report and present results to the class	[3, 5]
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Course Academic Calendar		
Week	Subject	Notes
Oct 06	Introduction	
Oct 13	Forward Engineering Design: Design thought and process, design steps	
Oct 20	Forward Engineering Design: examples	
Oct 27	System RE: RE methodology, RE steps	Prescreening
Nov 03	System RE: product development, product functions	
Nov 10	System RE: Product teardown, engineering specs, product architecture	Observation
Exam I (Nov. 13-21)		
Nov 17	Case Studies; Group Discussions	
Nov 24	Mechanical RE: Computer aided RE	
Dec 01	Mechanical RE: rapid prototyping	Dissection
Dec 08	Electronic RE: Identify components	
Dec 15	Electronic RE: PCB RE	Analysis
Exam 2 (Dec. 18-29)		
Dec 22	Electronic RE: VHDL	
Dec 29	Software RE Source code, re-drawing charts, applications	Report Due
Jan 05	Student Project Presentations	
Jan 12	Review	
FINAL EXAMS (Jan. 25 – Feb. 01)		

Assessment Guidance:

Evaluation of the student performance during the semester will be based on the following:

- Exams:** Two in-class exams will be given. Each will cover about 6-weeks of lectures.
- Project:** A project assignment will be handed to the students. The assignment will ask the students to reverse engineer a particular product. Students will be asked to write a technical report, show their work in the lab, and present it. A group of two students are expected to work on the project.
- Final Exam:** The final exam will cover all the class material.
- Quizzes:** 10-minute quizzes will be given to the students throughout the semester and will be used as bonus points.

Grading Policy:

First Exam	15%
Second Exam	15%
Project	30%
Final Exam	40%
Total:	100%