Philadelphia University - Faculty of Engineering
MSc. – Mechatronics Engineering Department
First Semester 2014/2015

Course Syllabus	
Course Title:	Advanced Programming (640752).
Text Book:	Beginning C# Object-Oriented Programming, Apress, 2011.
Class Time:	Thursday 12:00-15:00
Instructor:	Dr. Mohammed Bani Younis
email	mbaniyounis@philadelphia.edu.jo
website	http://www.philadelphia.edu.jo/academics/mbaniyounis/
Prerequisites	BS degree in Mechatronics or related fields
Office Hours:	Sun. Tue. Thurs. : 13:00-15:00

Course Description

Motivate Students' knowledge of Object Oriented Concepts (OOP). Teaching the knowledge and skills needed to develop reusable, quality programs. Using OOP to design and implement complex and real-time systems and to increase their proficiency in programming using available software Packages.

Learning outcomes / competencies

On completing the course, students will e able to have to following skills:

- Knowledge and understanding

  A1. Tell the principles of Object Oriented paradigms (OOP).

  A2. Use of knowledge of OOP to design and implement complex and real-time systems.

- Intellectual skills

  B1. Formulate and model designs for solutions to advanced engineering problems based on the methods taught

  B2. Choose modeling and programming tools appropriate to solve complex systems.

- Professional and practical skills

  C1 Apply OOP methods in control and mechatronic systems. in engineering problems.
  C2. Create and model complex problems by using appropriate tools.

- General and transferrable skills

  D1. Get hand-on experience in OOP method of thinking.

  D2. Communicate solutions adequately

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week	Topics
1	Introduction and definitions Systems (Classification, Analysis, Decomposition, Synthesis)
2	Creativity techniques (Analysis of problems)
3	Project management (Project planning, cost estimation)
4	Process models
5	Requirements engineering
6	System specification (structured, behaviour, data, and object oriented),
7	SA und SA/RT
8	Petri nets
10	Entity Relationship, Introduction to Database System
11-12	Object-Oriented Paradigm (Static, Dynamic). Parallel, Distributed Systems
13-14	Object orientation, UML und UML/RT
15-16	Software quality und testing Business process

Teaching Method:

Lectures, tutorials, problem solving, modeling, and self-studies.

Grade Distribution	
Mid Examination	**30 %**
Assignments, study cases	**30 %**
Final Exam	**40 %**

References:

1. **Beginning C# Object-Oriented Programming, Apress, 2011.**
2. **Beginning Visual C# 2012 Programming, John Wiley & Sons, 2012.**
3. **Real-Time Object Uniform Design Methodology with UML, Springer; 2007.**
4. **Softwaretechnik, Dr. B. Rumpe, Wintersemester 2002 / 2003, Technische Universität München**
5. **Softwaretechnik I, Prof. Dr.-Ing. Dr. h.c. P. Göhner, Wintersemester 2002 / 2003, Universität Stuttgart**
6. **Software Engineering I, Prof. Dr. A. Schürr, Frühjahrstrimester 2002, Universität der Bundeswehr München**
7. **Systems and Software Engineering I, Prof. Dr.-Ing. Vogel-Heuser, Sommersemester 2002, Universität Wuppertal**