Philadelphia University
Faculty of Engineering
Department of Computer
First Semester, 2015/2016

Course Syllabus

Course Title: Microprocessors	**Course code:** 630313
Course Level: 3rd Year	**Course prerequisite (s) and/or corequisite (s):** Logic Circuits (630211)
Lecture Time: 11:10 - 12:00 Sun. Tue. Thurs.	**Credit hours:** 3

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Eng Anis Nazer	**Eng.**	**712**	**14:00-16:00 Sunday & Tuesday**	**anis.nazer@gmail.com**

Course module description:
This covers the basic concepts in microprocessor based systems, and introduces the assembly language for Intel microprocessor.

Course module objectives:
At Completing of this module the student should be able to:

- Understand the architecture of the Intel microprocessor
- Learn assembly language, and write programs in assembly
- Learn memory and Input/Output interfacing techniques
- Understand the function and use of interrupts in a microprocessor system

Course/ module components

- **Books (title , author (s), publisher, year of publication)**

Assembly Language for x86 Processors, Sixth Edition, Kip R. Irvine, Prentice Hall, 2011.

- **Support material (s) (Course website: Includes reference books and Course Notes_ Power Point Slides).**

http://www.philadelphia.edu.jo/academics/qhamarsheh

Study guide (s)

- **Homework and laboratory guide (s): Listed in the Course website.**

Teaching methods:

Lectures, tutorials and problem solving

Duration: 16 weeks, 48 hours in total

Lectures: 44 hours, 3 per week + three exams (four hours)

Seminar: 3 hours, (last week)

Assignments: 2

Quizzes: 3

Learning outcomes:

- **Knowledge and understanding**
  1. Have a clear understanding of the microprocessor terminology.
  2. Be able to use the assembly language to develop and write programs that use different data types.
  3. Have knowledge of x86 Microprocessor architecture and 8086 Hardware specifications.
  4. Have knowledge of different microprocessor mechanisms and techniques such as Memory and I/O interfacing, Stack Operations, BIOS and MS-DOS Interrupts.
- **Cognitive skills (thinking and analysis).**
  1. Be able to use different microprocessor mechanisms and techniques such as Memory and I/O interfacing, Stack Operations, BIOS and MS-DOS Interrupts.
  2. Be able to design, code, test and deploy assembly programs that use different data types.
  3. Be able to understand the documentation for, and make use of the Assembly library.
- **Communication skills (personal and academic).**
  1. Display personal responsibility by working to multiple deadlines in complex activities.
  2. Be able to work effectively alone or as a member of a small group working on some programming tasks.
- **Practical and subject specific skills (Transferable Skills).**
  1. Plan and undertake a major individual assembly language project.
  2. Be able to work effectively alone or as a member of a small group working on some programming tasks.
  3. Prepare and deliver coherent and structured verbal and written technical reports.
  4. Use the scientific literature effectively.

Course Intended Learning Outcomes							
A - Knowledge and Understanding							
A1.	A2.	A3.	A4.	A5.	A6.	A7.	A8.
	■			■	■	■	
B - Intellectual Skills							
B1.	B2.	B3.	B4.	B5.	B6.	B7.	B8.	B9.
		■		■			■	
C - Practical Skills								
C1.	C2.	C3.	C4.	C5.	C6.	C7.	C8.	C9.	C10.
■	■	■	■		■	■		■	
D - Transferable Skills							
D1.	D2.	D3.	D4.	D5.	D6.	D7.	
	■	■		■		■	

Assessment instruments

- Short reports and/ or presentations, and/ or Short research projects

- Quizzes.
- Home works
- Final examination: 40 marks

Allocation of Marks	
Assessment Instruments	**Mark**
First exam	**20%**
Second exam	**20%**
Final examination: 40 marks	**40%**
Reports, research projects, Quizzes, Home works, Projects	**20%**

Documentation and academic honesty

Practical Submissions

The assignments that have work to be assessed will be given to the students in separate documents including the due date and appropriate reading material.

Documentation and Academic Honesty

Submit your home work covered with a sheet containing your name, number, course title and number, and type and number of the home work (e.g. tutorial, assignment, and project).

Any completed homework must be handed in to my office (room E712) by 15:00 on the due date. After the deadline "zero" will be awarded. You must keep a duplicate copy of your work because it may be needed while the original is being marked.

You should hand in with your assignments:

1- A printed listing of your test programs (if any).
2- A brief report to explain your findings.
3- Your solution of questions.

For the research report, you are required to write a report similar to a research paper. It should include:

- **Abstract**: It describes the main synopsis of your paper.
- **Introduction**: It provides background information necessary to understand the research and getting readers interested in your subject. The introduction is where you put your problem in context and is likely where the bulk of your sources will appear.
- **Methods (Algorithms and Implementation)**: Describe your methods here. Summarize the algorithms generally, highlight features relevant to your project, and refer readers to your references for further details.
- **Results and Discussion (Benchmarking and Analysis)**: This section is the most important part of your paper. It is here that you demonstrate the work you have accomplished on this project and explain its significance. The quality of your analysis will impact your final grade more than any other component on the paper. You should therefore plan to spend the bulk of your project time not just gathering data, but determining what it ultimately means and deciding how best to showcase these findings.
- **Conclusion**: The conclusion should give your reader the points to "take home" from your paper. It should state clearly what your results demonstrate about the problem you were tackling in the paper. It should also generalize your findings, putting them into a useful context that can be built upon. All generalizations should be supported by your data, however; the discussion should prove these points, so that when the reader gets to the conclusion, the statements are logical and seem self-evident.

- **Bibliography:** Refer to any reference that you used in your assignment. Citations in the body of the paper should refer to a bibliography at the end of the paper.

• **Protection by Copyright**

1. Coursework, laboratory exercises, reports, and essays submitted for assessment must be your own work, unless in the case of group projects a joint effort is expected and is indicated as such.
2. Use of quotations or data from the work of others is entirely acceptable, and is often very valuable provided that the source of the quotation or data is given. Failure to provide a source or put quotation marks around material that is taken from elsewhere gives the appearance that the comments are ostensibly your own. When quoting word-for-word from the work of another person quotation marks or indenting (setting the quotation in from the margin) must be used and the source of the quoted material must be acknowledged.
3. Sources of quotations used should be listed in full in a bibliography at the end of your piece of work.

• **Avoiding Plagiarism**.

1. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
2. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.
3. Direct quotations from an earlier piece of your own work, if not attributed, suggest that your work is original, when in fact it is not. The direct copying of one's own writings qualifies as plagiarism if the fact that the work has been or is to be presented elsewhere is not acknowledged.
4. Plagiarism is a serious offence and will always result in imposition of a penalty. In deciding upon the penalty the Department will take into account factors such as the year of study, the extent and proportion of the work that has been plagiarized, and the apparent intent of the student. The penalties that can be imposed range from a minimum of a zero mark for the work (without allowing resubmission) through caution to disciplinary measures (such as suspension or expulsion).

Course/module academic calendar

week		Basic and support material to be covered	Homework/reports and their due dates
(1)	23/2 -27/2	Introduction to the microprocessor	
(2)	2/3 - 6/3	x86 Microprocessor architecture	
(3)	9/3 – 13/3		
(4)	16/3 – 20/3	8086 Hardware specifications	
(5)	23/3 – 27/3	Assembly Language Fundamentals: Defining Data, Symbolic Constants	
(6)	30/3 -3/4		Assignment 1 Week 6

(7)	6/4 – 10/4	x86 Memory Management: Addressing Modes	Quiz 1 First exam 18-26\11\2015
(8)	13/4 – 17/4	8086 Instruction set: Microprocessor Programming	
(9)	20/4 - 24	Data-Related Operators and Directives	Assignment 2 Week 12
(10)	27/4 -1/5	Data Transfers, Addressing, and Arithmetic	
(11)	4/5 – 8/5		Quiz 2 Second exam 27\12\2015-5\1\2016
(12)	11/5 – 15/5	Memory and I/O interfacing	
(13)	18/5 – 22/5	Stack Operations	
(14)	25/5 – 29/5	Conditional Processing: Boolean and Comparison Instructions	Quiz 3
(15)	1/6 – 5/6	Procedures: Defining and Using Procedures	
(16)	8/6 – 12/6	BIOS and MS-DOS Interrupts Direct memory access	Final exam 30\1-7\2\2016

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials 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.

Module references

Books

1. The Intel microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro processor, Pentium II, Pentium III, and Pentium 4 , and Core2 with 64-bit extensions: architecture, programming, and interfacing, Barry B. Brey, 8th ed., Pearson / Prentice Hall, 2009.
2. Assembly language for intel-based computers, Kip R. Irvine, 5th ed., Pearson Prentice Hall, 2007.
3. Micrioprocessors and micropcomputer--based system design, Mohamed Rafiquzzaman, Universal book stall, 1996, 1997.
4. Introduction to Assembly language programming : Pentium and RISC processors / Sivarama P. Dandamudi.— 2nd ed., Springer Science+Business Media, Inc, 2005.

Web sites

http://datasheets.chipdb.org/Intel/x86/808x/datashts/8086/
http://www.emu8086.com/assembler_tutorial/
http://www.emu8086.com/
http://www.dailyfreecode.com/Tutorial_Page10/Assembly_Language-49.aspx