CEN319

Microprocessor Systems

Term 2 - 2014

Course Profile

All details in this course profile for CEN319 have been officially approved by MU University and represent a learning partnership between the University and you (our student). The information will not be change unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

OVERVIEW

The advent of low-cost computers on integrated circuits has transformed modern society. General-purpose microprocessors in personal computers are used for computation, text editing, multimedia display, and communication over the Internet. Many more microprocessors are part of embedded systems, providing digital control over myriad objects from appliances to automobiles to cellular phones and industrial process control. Microprocessor has the functionality of computer's central processing unit or the functionality of an integrated Circuit. All modern CPUs are microprocessors making the micro- prefix redundant.

DETAILS

Level	Graduate
Credit Points	3(2-0-2)
Student Contribution Band	-
Function of full Time Student Load	-

PRE-REQUISITES OR CO-REQUISITES

Pre-requisite: EE 111, CEN 211

ATTENDANCE REQUIRMENTS

All on-campus students are expected to attend scheduled classes in CEN319, The classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

ASSESSMENT OVERVIEW

Assessment Task	Weighting
1. Midterm Exam-1	15%
2. Midterm Exam-2	15%
3. Quizzes	10%
4. Assignments/Report/Seminar	20%
5. Final Exam	40%

This is a graded course: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the course of at least 50%, or an overall grade of 'pass' in order to pass the course. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Procedures for more details of interim results and final grades.

MU University Policies

All University policies are available on the MUPortal.

You may wish to view these policies:

- Assessment of Coursework Procedures
- Grads and Results Procedure
- Review ox Grade Policy
- Plagiarism Procedure
- Student Misconduct and Plagiarism Policy
- Monitoring Academic Progress Policy
- Monitoring Academic Progress Policy
- Monitoring Academic Progress Procedures
- Refund Excess Payments (Credit Balances) Policy
- Student complaints Policy
- Use of Internet, mail and Computing Facilities Policy

This list is not an exhaustive list of all University policies. The full lists of University policies are available on the MUPortal.

Course Learning Outcomes

1. Students should gain the knowledge of microprocessor.
2. Students have to learn the architecture of microprocessor.
3. Students have to learn assembly language programming using mnemonics.
4. Students should be able to distinguish between various types of microprocessors like 8085,8086,8088 and others.
5. Students should learn about the interrupts and its applications.
6. Students should gain knowledge of programming techniques such as looping, counting and indexing addressing nodes by using assembly language.

Alignment of Learning outcomes, Assessment and Graduate attributes

ALLIGNMENT OF ASSESSMENT TASKS TO LEARNING OUTCOMES

Assessment Task	Learning Outcomes					
	1	2	3	4	5	6
1. Midterm Exam-1	.	.	.	.		
2. Midterm Exam-2	.	.	.	.	.	
3. Quizzes	.	.	.	.	.	.
4. Assignments/Report/Seminar	.	.	.	.	.	.
5. Final Exam	.	.	.	.	.	.

Textbook and Resources

1. R. S. Gaonkar, "Microprocessor Architecture, Programming and Applications with 8085/8080A", Wiley Eastern limited.
2. A. Mathur, 'Introduction to Microprocessor', Third Edition, Tata McGraw-Hill Publishing Co. Ltd.
3. B. Brey, " The Intel Microprocessors", Prentice Hall
4. Dauglas V. Hall, "Microprocessor and Interfacing, Programming and Hardware", Tata McGraw- Hill.

PRESCRIBED TEXTBOOKS

Guide to Firewalls 7 VPN			
Author/s	: R. S. Gaonkar	Year	: 2002
Edition	: 5th	Publisher	: Prentice Hall
City	:	State	:MA
Country	:		

IT RESOURCES

You will need access to the following IT resources:

- MU University Student Email
- Internet
- Course Website
- Computer System with Software to run microprocessor lab

Referencing style

All submissions for this course must use the **American Psychological Association (APA)** referencing style (details can be obtained here) OR **Harvard (author-date)** referencing style (details can be obtained here). For further information, see the Assessment Tasks below.

Teaching Contacts

Course Coordinator:	Dr. Ahmad Raza Khan
Lab/Tutorial Instructor:	Mr. Rahim
Email:	ar.khan@mu.edu.sa
Office Hours:	8:00am to 2:30pm
Office Number:	5383

Schedule

Week	Module/Topic	Chapter	Event and submission
Week-1	Introduction to Micro Computers	Introduction to Micro Computers	
Week-2	Microprocessors and Assembly Languages - Microprocessor architecture and its operations - 8085 MPU	Microprocessors and Assembly Languages - Microprocessor architecture and its operations - 8085 MPU	**Assignment on Architecture design of MPU 8085**
Week-3	8085 Instruction set and classifications Writing assembly levels programs - Programming techniques	8085 Instruction set and classifications Writing assembly levels programs - Programming techniques	**Assignment on instructions of Microprocessor**
Week-4	looping, counting and indexing addressing nodes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging	looping, counting and indexing addressing nodes - Data transfer instructions - Arithmetic and logic operations - Dynamic	**Assignment on debugging and loops**

		debugging	
Week-5	Counters and Time delays - Hexadecimal counter ModuloIO counter	Counters and Time delays - Hexadecimal counter ModuloIO counter	**Assignment on counters**
Week-6	Pulse Timings for flashing lights	Pulse Timings for flashing lights	**Mid Term -1 Exam**
Week-7	Debugging counter and time delay program - stack - subroutine - conditional call and return instructions	Debugging counter and time delay program - stack - subroutine - conditional call and return instructions	**Assignment on conditional call**
Week-8	Interrupts-Implementing interrupts - Multiple interrupt 8085	Interrupts-Implementing interrupts - Multiple interrupt 8085	
Week-9	Trap Problems on implementing 8085 interrupt	Trap Problems on implementing 8085 interrupt	**Online Quizzes**
Week-10	DMA - Memory interfaces - Ram & Rom - I/O interface-Direct I/O - Memory mapped I/O	DMA - Memory interfaces - Ram & Rom - I/O interface-Direct I/O - Memory mapped I/O	**Mid Term 2 Exam**
Week-11	Pentium	Pentium	
Week-12	The single core and the multi-core processors	The single core and the multi-core processors	
Review Exam Week			**Final Exam**
Exam Week			

Assessment Task

WRITTEN ASSESMENT

Assessment Title	Midterm Exam-1
Task Description	This assignment is aligned to learning outcomes 1, 2, 3 and 4. In that regard, the assignment contains questions that assess: 1) Students' thorough understanding of Microprocessor design and Instructions; 2) Students' understanding about various instructions used in Microprocessor design. 3) Students' learning the architecture of microprocessor.
Assessment Due Date	**Week 6**
Return Date to Students	Week 8
Weighting	15%
Assessment Criteria	The assessment criteria for this task will be the grade given to the student
Referencing Style	American Psychological Association (APA) or Harvard (author-date)
Submission	Exam grades will be given to the students
Learning Outcomes Assessed	1. Students should gain the knowledge of microprocessor. 2. Students have to learn the architecture of microprocessor. 3. Students have to learn assembly language programming using mnemonics. 4. Students should be able to distinguish between various types of microprocessors like 8085,8086,8088 and others.

Assessment Title	Midterm Exam-2
Task Description	This assignment is aligned to learning outcomes 1, 2, 3, 4 and 5. In that regard, the assignment contains questions that assess: 1) Students' thorough understanding 8085 instruction sets; 2) Students' understanding about various Interrupts in Microprocessor design. 3) Students' learning DMA - Memory interfaces - Ram & Rom - I/O interface- Direct I/O - Memory mapped I/O.

Assessment Due Date	**Week 10**
Return Date to Students	Week 11
Weighting	15%
Assessment Criteria	The assessment criteria for this task will be the grade given to the student
Referencing Style	American Psychological Association (APA)　　or Harvard (author-date)
Submission	Exam grades will be given to the students
Learning Outcomes Assessed	1. Students should gain the knowledge of microprocessor. 2. Students have to learn the architecture of microprocessor. 3. Students have to learn assembly language programming using mnemonics. 4. Students should be able to distinguish between various types of microprocessors like 8085,8086,8088 and others. 5. Students should learn about the interrupts and its applications.

Assessment Title	Online Quizzes
Task Description	This assignment is aligned to learning outcomes 1, 2, 3, 4, 5 and 6. An online quiz will be conducted for the students on all the topics covered students have to use the computer system to check the correct answer.
Assessment Due Date	**Week 09**
Return Date to Students	Week 09
Weighting	10%
Assessment Criteria	The assessment criteria for this task will be the grade given to the student
Referencing Style	American Psychological Association (APA)　　or Harvard (author-date)
Submission	Exam grades will be given to the students
Learning Outcomes Assessed	1. Students should gain the knowledge of microprocessor. 2. Students have to learn the architecture

of microprocessor.
3. Students have to learn assembly language programming using mnemonics.
4. Students should be able to distinguish between various types of microprocessors like 8085,8086,8088 and others.
5. Students should learn about the interrupts and its applications.
6. Students should gain knowledge of programming techniques such as looping, counting and indexing addressing nodes by using assembly language.

Assessment Title	Assignments/Report/Seminar
Task Description	This assignment is aligned to learning outcomes 1, 2, 3, 4, 5 and 6. All students have to submit there assignments and homework in time.
Assessment Due Date	**Week 02,03,04,05,07**
Return Date to Students	Week 03,04,05,06,08
Weighting	20%
Assessment Criteria	The assessment criteria for this task will be the grade given to the student
Referencing Style	American Psychological Association (APA) or Harvard (author-date)
Submission	Exam grades will be given to the students
Learning Outcomes Assessed	1. Students should gain the knowledge of microprocessor. 2. Students have to learn the architecture of microprocessor. 3. Students have to learn assembly language programming using mnemonics. 4. Students should be able to distinguish between various types of microprocessors like 8085,8086,8088 and others. 5. Students should learn about the interrupts and its applications. 6. Students should gain knowledge of programming techniques such as looping,

	counting and indexing addressing nodes by using assembly language.

EXAMINATION

Outline	Complete an examination
Date	**During University examination period**
Weighting	**40%**
Length	3 Hrs
Details	Exam Paper will be given to the students Calculator Permitted Closed Books
Learning Outcomes Assessed	1. Students should gain the knowledge of microprocessor. 2. Students have to learn the architecture of microprocessor. 3. Students have to learn assembly language programming using mnemonics. 4. Students should be able to distinguish between various types of microprocessors like 8085,8086,8088 and others. 5. Students should learn about the interrupts and its applications. 6. Students should gain knowledge of programming techniques such as looping, counting and indexing addressing nodes by using assembly language.