Course Profile

Course Name:-	**Microprocessor Systems**
Course Code:-	**CEN319**
Academic Year:-	**2014**
Semester:-	**2nd**

Course Overview

This course is introducing the following topics Introduction to Micro Computers, Microprocessors and Assembly Languages - Microprocessor architecture and its operations - 8085 MPU - 8085 Instruction set and classifications. Writing assembly levels programs - Programming techniques such as looping, counting and indexing addressing nodes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging. Counters and Time delays - Hexadecimal counter OBJ Modulo counter .- Pulse Timings for flashing lights - Debugging counter and time delay program - stack - subroutine - conditional call and return instructions. Interrupts- Implementing interrupts - Multiple interrupt 8085 - trap Problems on implementing 8085 interrupt - DMA - Memory interfaces - Ram & Rom - I/O interface-Direct I/O - Memory mapped I/O. Pentium, the single core and the multi- core processors.

Course Details	
Level:-	**7**
Credit:-	**3(2-0-2)**
Pre-Requisites:-	**EE 111, CEN 211**
Co- Requisites:-	**NA**

Learning Outcomes of Course

After successful completion of this course, student will be able to-

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.

Course Assessment

Name of Assessment Task	Weight of Assessment	Week Due
1. Midterm Exam-1	**15%**	**Week06**
2. Midterm Exam-2	**15%**	**Week10**
3. Quizzes/Assignments/Report/Seminar	**10%**	**Week09**
4. Lab	**20%**	**Week09**
5. Final Exam	**40%**	**Week15**

Assessment Task and Learning Outcomes Alignment

Assessment Task Name	Course 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	√	√	√	√	√	√

Teaching Contact Details

Name of Course Coordinator:-	**Dr. Ahmad Raza Khan**
Email of Course Coordinator:-	**ar.khan@mu.edu.sa**
Lab/Tutorial Instructor:-	**Mr. Abdul Rahim Khan**
Email of Lab/Tutorial Instructor:-	**m.khan@mu.edu.sa**
Office Hours:-	**8:00am to 2:30pm**
Office Number:-	**024-1-19-1**
Office Phone Number:-	**01640425-2536**

Details of Required Text Book

Book Name	Authors Name	Publisher	Year	Edition
1. Microprocessor Architecture, Programming and Applications with 8085/8080A	R. S. Gaonkar	Wiley Eastern limited, Prentice Hall	Nov 5th 1998	4th Edition

Details of Required Reference Books

Book Name	Authors Name	Publisher	Year	Edition
1. Introduction to Microprocessor	A. Mathur	Tata McGraw-Hill Publishing Co. Ltd	Jan 1, 1990	3rd Edition
2. The Intel Microprocessors	B. Brey	Prentice Hall	June 28, 2008	8th Edition
3. Microprocessor and Interfacing, Programming and Hardware	Dauglas V. Hall	Tata McGraw-Hill Publishing Co. Ltd	July 1st 1991	2nd Edition

IT Resources

The following IT Resources will require to access-

1. MU University Student Email
2. Internet
3. Course Website
4. Computer System with Software to run microprocessor lab

Course Schedule

Course Topics	Book's Chapter	Event Name	Week Due
Introduction to Micro Computers	Unit-1 Chapter 1-2		Week-1
Microprocessors and Assembly Languages - Microprocessor architecture and its operations - 8085 MPU	Unit-2 Chapter 2-3	Assignment on Architecture design of MPU 8085	Week-2
8085 Instruction set and classifications	Unit-2 Chapter 2-	Assignment on	Week-3

Writing assembly levels programs - Programming techniques	**3**	**instructions of Microprocessor**	
looping, counting and indexing addressing modes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging	**Unit-3 Chapter 4**	**Assignment on debugging and loops**	Week-4
Counters and Time delays - Hexadecimal counter Modulo counter	**Unit-4 Chapter 5**	**Assignment on counters**	Week-5
Pulse Timings for flashing lights	**Unit-5 Chapter 6-7**	**Mid Term -1 Exam**	Week-6
Debugging counter and time delay program - stack - subroutine - conditional call and return instructions	**Unit-5 Chapter 6-7**	**Assignment on conditional call**	Week-7
Interrupts- Implementing interrupts - Multiple interrupt 8085	**Unit-8 Chapter 11-12-13-14**		Week-8
Trap Problems on implementing 8085 interrupt	**Unit-8 Chapter 11-12-13-14**	**Online Quizzes**	Week-9
DMA - Memory interfaces - Ram & Rom - I/O interface-Direct I/O - Memory mapped I/O	**Unit-8 Chapter 11-12-13-14**	**Mid Term 2 Exam**	Week-10
Pentium	**Pentium**		Week-11
The single core and the multi- core processors	**The single core and the multi-core processors**		Week-12
Review Exam Week			Week-13
Review Exam Week			Week-14
Review Exam Week			Week-15
			Exam Week

Referencing Style

The **American Psychological Association (APA)** referencing style must be use for all submissions of this course.

Course Assessment Task

Assessment Name:-	Midterm Exam-1
Description of Task Assessment:-	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.
Task Assessment Due Week/Date:-	**Week 6**

Return Week/Date to Students:-	Week 8
Weight of Task Assessment:-	15%
List of 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 Name:-	Midterm Exam-2
Description of Task Assessment:-	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.
Task Assessment Due Week/Date:-	**Week 10**
Return Week/Date to Students:-	Week 11
Weight of Task Assessment:-	15%
List of 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 Name:-	Online Quizzes/Assignments/Report/Seminar
Description of Task Assessment:-	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.
Task Assessment Due Week/Date:-	**Week 9**
Return Week/Date to Students:-	Week 9
Weight of Task Assessment:-	10%
List of 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 Name:-	Lab
Description of Task Assessment:-	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.
Task Assessment Due Week/Date:-	**Week 02,03,04,05,07**
Return Week/Date to Students:-	**Week 03,04,05,06,08**
Weight of Task Assessment:-	20%
List of 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 Name:-	Final Exam
Weight of Task Assessment:-	**40%**
Duration:-	**3Hrs**
Warning:-	
List of 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.