

Course Syllabus

1	Course title	Microprocessors and Microcontrollers Applications
2	Course number	0908434
3	Credit hours	3
	Contact hours (theory, practical)	3 theoretical hours
4	Prerequisites/corequisites	Object-Oriented Problem Solving (0907342) + Industrial Communication Systems and Networks (0908333)
5	Program title	B.Sc. in Mechatronics Engineering
6	Program code	0908434
7	Awarding institution	The University of Jordan
8	School	School of Engineering
9	Department	Mechatronics Engineering Department
10	Course level	First Year
11	Year of study and semester (s)	2022/2023 First semester
12	Other department (s) involved in teaching the course	None
13	Main teaching language	English
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....
16	Issuing/Revision Date	5/10/2022

17 Course Coordinator:

Name: Dr. Musa AlYaman	Contact hours: Sunday 9:30-10:30, Monday 9:30-10:00
Office number: 202 Mechatronics Engineering Department	Phone number: : 5355000 Ext. 23032
Email: m.alyaman@ju.edu.jo	



18 Other instructors:

None

19 Course Description:

Introduction to embedded systems including hardware and software architectures. embedded systems hardware components and platforms, interfacing with external environments using sensors and actuators, embedded software organization including real-time operating systems, an overview of communication protocols, and emerging application domains such as biomedical devices, home appliances and electronics.

20 Course aims and outcomes:

A- Aims:

The course motivates the student to acquire the knowledge, skills and attitudes of recognition the concept of embedded systems and ability to program and interface the PIC Microcontroller

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)
SLOs of the course							
1. An ability to function effectively on a team whose members together provide leadership in a Microprocessors and Microcontrollers topics					X		
2. Create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives when using Microcontrollers in Embedded Systems					X		

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Day/Date
1	1.1	Course Overview	5	Face to face		Synchronous		Monday 10/10/2022
	1.2	Course Overview	5	Face to face		Synchronous		Wednesday 12/10/2022
	1.3							
2	2.1	Chapter 1 Introduction to Microprocessor Slides (1-5)	5	Face to face	Ch1_Lec1_P1 + Ch1_Lec1_P2	Synchronous		Monday 17/10/2022
	2.2	Chapter 1 Introduction to Microprocessor Slides (5-7)	5	Face to face	Ch1_Lec2_P1 + Ch1_Lec2_P2	Synchronous		Wednesday 19/10/2022
	2.3							
Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Day/Date
3	3.1	Chapter 1 Introduction to Microprocessor Slides (8-13)	5	Face to face	Ch1_Lec3_P1 + Ch1_Lec3_P2	Synchronous		Monday 24/10/2022
	3.2	Chapter 1 Introduction to Microprocessor Slides (14-20)	5	Face to face	Ch1_Lec4_P1 + Ch1_Lec4_P2	Synchronous		Wednesday 26/10/2022
	3.3							

4	4.1	Chapter 2 Microcontroller Hardware Slides (1-8)	5	Face to face	Ch2_Lec1_P1 + Ch2_Lec1_P2	Synchronous		Monday 31/10/2022
	4.2	Chapter 2 Microcontroller Hardware Slides (8-20)	5	Face to face	Ch2_Lec2_P1 + Ch2_Lec2_P2	Synchronous		Wednesday 2/11/2022
	4.3							
5	5.1	Chapter 3 Microcontroller Software Slides (1-12)	5	Face to face	Ch3_Lec1_P1 + Ch3_Lec1_P2	Synchronous	Q1 (Chapter1)	Monday 7/11/2022
	5.2	Chapter 3 Microcontroller Software Slides (9-16)	5	Face to face	Ch3_Lec2_P1 + Ch3_Lec2_P2	Synchronous		Wednesday 9/11/2022
	5.3							
6	6.1	Chapter 3 Microcontroller Software Slides (17-22)	5	Face to face	Ch3_Lec3_P1 + Ch3_Lec3_P2	Synchronous		Monday 14/11/2022
	6.2	Chapter 3 Microcontroller Software Slides (22-26)	5	Face to face	Ch3_Lec4_P1 + Ch3_Lec4_P2	Synchronous		Wednesday 16/11/2022
	6.3							
7	7.1	Chapter 4 Advance Microcontroller Slides (1-7)	5	Face to face	Ch4_Lec1	Synchronous	Q2 (Chapter 3)	Monday 21/11/2022

	7.2	Chapter 4 Advance Microcontroller Slides (7-22)	5	Face to face	Ch4_Lec2_P1 + Ch4_Lec2_P2	Synchronous		Wednesday 23/11/2022
	7.3							
8	8.1	Chapter 5 Timers Slides (1-4)	5	Face to face	Ch5_Lec1	Synchronous		Monday 28/11/2022
	8.2	Mid Term Chapters (1-4)	5	Face to face		Synchronous	Mid Exam 10-11:30 am	Wednesday 30/11/2022
	8.3							
9	9.1	Chapter 5 Timers Slides (5-9)	5	Face to face	Ch5_Lec2	Synchronous		Monday 5/12/2022
	9.2	Chapter 5 Timers Slides (10-15)	5	Face to face	Ch5_Lec3	Synchronous		Wednesday 7/12/2022
	9.3							
Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Day/Date
10	10.1	Chapter 6 USART Slides (1-6)	5	Face to face	Ch6_Lec1	Synchronous		Monday 12/12/2022
	10.2	Chapter 6 USART Slides (7-11)	5	Face to face	Ch6_Lec2	Synchronous	Project Available : 13:30	Wednesday 14/12/2022
	10.3							

11	11.1	Chapter 6 USART Slides (12-17)	5	Face to face	Ch6_Lec3	Synchronous		Monday 19/12/2022
	11.2	Chapter 7 ADC Slides (1-8)	5	Face to face	Ch7_Lec1	Synchronous		Wednesday 21/12/2022
	11.3							
12	12.1	Chapter 7 ADC Slides (9-13)	5	Face to face	Ch7_Lec2	Synchronous	Q3 (Chapter 6)	Monday 26/12/2023
	12.2	Chapter 7 ADC Slides (14-18)	5	Face to face	Ch7_Lec3	Synchronous		Wednesday 28/12/2023
	12.3							
13	13.1	Chapter 8 Microcontroller Interface Slides (1-12)	5	Face to face	Ch8_Lec1	Synchronous		Monday 2/1/2023
	13.2	Chapter 8 Microcontroller Interface Slides (12-19)	5	Face to face	Ch8_Lec2	Synchronous	Project Due:13:30	Wednesday 4/1/2023
	13.3							
14	14.1	Chapter 9 18 Series + C Slides (1-13)	5	Face to face	Ch9_Lec1	Synchronous		Monday 9/1/2023
	14.2	Chapter 9 18 Series + C Slides (14-21)	5	Face to face	Ch9_Lec2	Synchronous		Wednesday 11/1/2023
	14.3							



15	15.1	Course Discussion and Feedback	5	Face to face				Monday 16/1/2023
	15.2							Wednesday 18/1/2023
	15.3							

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Quizzes	10	Chapters 1, 3 and 6		5 th , 7 th and 12 th	Moodle
Project	10		5	10 th week	Moodle
Midterm Exam	30	Chapters 1-4 Wednesday 30/11/2022		8 th week	Moodle
Final Exam	40	All topics			Moodle

23 Course Requirements

Each student should have a computer (with MS Project, MS Excel, and MS Word installed) and internet connection.

24 Course Policies:

A- Attendance policies:

Students are expected to attend EVERY CLASS SESSION and they are responsible for all materials, announcements, schedule changes, etc., discussed in class

B- Absences from exams and submitting assignments on time:



There will be no make-up exams for any exam or missed assignment, which will be taken during the course. Exceptions to this rule is restricted only to the following cases:

- Death of only first order relatives (father, mother, sister, or brother).
- Hospital entry (inpatient) during the time of the examination.

Any other cases will be given the zero mark in the corresponding exam or assignment.

C- Health and safety procedures:

Students are responsible for:

- Keeping themselves informed of conditions affecting their health and safety;
- Participating in safety training programs;
- Following to health and safety practices in their workplace, classroom;
- Advising of or reporting unsafe practices or serious hazards in the classroom or laboratory.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Follow the UoJ guidelines that providing definitions, procedures, and recommendations for promotion and violation of academic honesty and integrity.

E- Grading policy:

Follow the UoJ guidelines that providing definitions of undergraduate grading policy

F- Available university services that support achievement in the course:

Text book, class handouts, and an access to Personal Computer with office software

25 References:

A- Required book(s), assigned reading and audio-visuals:

Designing Embedded Systems with PIC Microcontrollers: Principles and Applications, Tim Wilmshurst, Newnes, 2007

B- Recommended books, materials, and media:

1. K. Irvine, Assembly Language for Intel-based Computers 4 Ed., Prentice Hall 2003
2. Tim Wilmshurst, An Introduction to the Design of Small-Scale Embedded Systems.



3. Barry B. Brey, The Intel Microprocessors, Architecture, Programming and Interfacing, Prentice Hall
4. W. Triebel, A. Singh, The 8088 and 8086 Microprocessors: Programming, Interfacing, Software, Hardware, and Applications (4th Edition) Prentice Hall, 2003

26 Additional information:

Name of Course Coordinator: Dr. Musa AlYaman-----Signature: ----- Date: 5/10/2022
Head of Curriculum Committee/Department: ----- Signature: ----- ---
Head of Department: ----- Signature: ----- -
Head of Curriculum Committee/Faculty: ----- Signature: ----- -
Dean: ----- Signature: -----