Jordan University of Science and Technology
Faculty of Engineering
Mechanical Engineering Department

ME770 Embedded Systems In Mechatronics - JNQF Level: 6
First Semester 2024-2025

Course Catalog
3 Credit Hours. The course will introduce the mechatronics graduate students to embedded systems for mechatronics systems. Special emphasis will be placed on microcontroller/microprocessor hardware and software architecture, programming, interfacing with real-time mechatronic systems, and designing stand-alone embedded systems for mechatronics products.
Teaching Method: On Campus

Text Book	
Title	- Microcontroller Technology: The 68HC11
Author(s)	, Peter Spasov
Edition	3rd Edition
Short Name	TextBook
Other Information	Prentice-Hall, 1999. ISBN: 0-13-901240-0

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#1	- Embedded Microcomputer Systems: real Time Interfacing	Jonathan W. Valvano, Thomson	1st Edition	(2007). ISBN 0-534-36642-2
Ref#2	Embedded system design 68HC12 & HCS12.	B. Steven &P. Daniel	4th Edition	Prentice Hall Inc., 2005.

Instructor	
Name	**Dr. AHMAD ALSHORMAN**
Office Location	C5-L1 Office 4

Office Hours	Sun : 10:30 - 12:30 Mon : 09:00 - 11:00 Wed : 13:30 - 14:30 Thu : 10:00 - 11:00
Email	amalshorman6@just.edu.jo

Class Schedule & Room

Section 1:
  Lecture Time: Mon : 14:00 - 17:00
  Room: U

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Microcomputer-Based Systems.	From **TextBook**
Weeks 3, 4, 5	Software Development.	From **TextBook**, From **Ref#1**
Weeks 6, 7	Interfacing Methods.	From **TextBook**, From **Ref#1**, From **Ref#2**
Weeks 8, 9	Interrupt Synchronization.	From **TextBook**, From **Ref#1**
Weeks 10, 11, 12	Timing Generation and Measurements.	
Weeks 13, 14, 15	Serial I/O Devices & Parallel Port Interfaces.	From **TextBook**, From **Ref#2**
Week 16	Analog Interfacing.	From **TextBook**, From **Ref#2**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the hardware and software architecture of microcontrollers/microprocessors and their role in mechatronic systems. [1L6K1, 1L6K2]	25%	
Develop embedded system software to interface with sensors, actuators, and real-time mechatronic applications. [1L6C3, 1L6C4]	25%	
Design and implement a complete embedded system, including input/output interfaces and microcontroller programming, for a mechatronic product. [1L6S1, 1L6S2, 1L6S3]	25%	
Demonstrate practical skills by building and evaluating a stand-alone embedded system project that integrates theoretical and hands-on knowledge. [1L6S1]	25%	

Relationship to NQF Outcomes (Out of 100%)						
L6K1	L6K2	L6S1	L6S2	L6S3	L6C3	L6C4
12.5	12.5	33.33	8.33	8.33	12.5	12.5

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