Faculty of Computers and Information Technology

Embedded Systems

Information :

Course Code :	CS420	**Level** :	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Computer Science

Area Of Study :

Define knowledge that enhances skills in fundamental area of embedded systems.
Use and adopt fundamental and advanced mathematics, basic sciences and computer science theories in all development phases of embedded systems.
Use all available principles and tools of embedded systems.

Description :

Basic concepts of embedded systems; Organizational aspects of embedded systems; Programming and software aspects of embedded systems; Applications and case studies.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Define the fundamental mathematics and statistics required to solve problems in embedded systems area.
2 -	Explain what constitutes embedded systems and how to address issues related to design of each system components.
3 -	Explain the principles and techniques of embedded systems.

b.Intellectual Skills: :

1 -	Illustrate a set of alternative solutions for a given embedded systems problems associated with their results.
2 -	. Select appropriate methodologies and techniques for a given embedded systems problem solution and setting out their limitations, restrictions and errors.
3 -	Classify algorithms, methods and techniques used in embedded systems problems solutions.

c.Professional and Practical Skills: :

1 -	Apply effective information to implement embedded systems
2 -	Deploy effective supporting tools for embedded systems programming languages
3 -	Use human computer interaction principles in the construction and evaluation of user interfaces for wide ranges of embedded systems applications

d.General and Transferable Skills: :

1 -	Work in a team to develop the requirement documentation.
2 -	Apply communication skills in presentations and report writing using various methods and tools

ABET Course outcomes :

1 -	Demonstrate understanding of basic embedded systems concepts, design principles, practices, and techniques.

2 -	Compare embedded system design models using different processor technologies.	
3 -	Analyze and compare the various types of peripherals used in embedded systems.	
4 -	Analyze a given embedded system design and identify its performance critical points.	
5 -	Utilize a top-down modular design process to complete a medium complexity embedded system design project under instructor specified design constraints.	
6 -	Communicate effectively.	

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Revision on basics of microprocessors	4	2	2
Introduction . basic concepts of embedded systems	4	2	2
Disciplined development . organization aspects of embedded systems	4	2	2
Disciplined development . organization aspects of embedded systems	4	2	2
Installing embedded systems building blocks	4	2	2
Installing embedded systems building blocks	4	2	2
Troubleshooting	4	2	2
Troubleshooting	4	2	2
Mid Term Exam	2		
Troubleshooting tools	4	2	2
Applications and case studies	4	2	2
Applications and case studies	4	2	2
Project presentation	4	2	2
Final Exam	2		

Teaching And Learning Methodologies :

Interactive Lectures including discussion
Practical Lab Sessions
Self-Study (Project / Reading Materials / Online Material / Presentations)
Case Studies

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	50.00	14	
Midterm Exam (s)	20.00	9	
Others (Participation)	10.00		
Practical Exam	10.00		
Quizzes	10.00	5	
Team Work Projects	10.00		

http://www.fue.edu.eg

Course Notes :

Course Notes are available with all the slides used in lectures in electronic form on Learning Management System (Moodle)

Recommended books :

G. R. Wilson, Embedded Systems and Computer Architecture, Elsevier Science, latest edition.

Web Sites :

IEEE transactions on Embedded Systems