1. Course Number and Course Title:

COE 410- Embedded Systems: Design and Applications

2. Credit Hours:

2-3-3

3. Prerequisites and/or Co-Requisites:

COE 241 (Microcontrollers: Programming and Interfacing) and ELE 241(Electronics I) or ELE 225 (Electric Circuits and Devices)

4. Name and Contact Information of Instructor:

Dr. Abdul-Rahman Al-Ali

5. Course Description (Catalog Description):

Introduces embedded systems computing platforms and examines their basic building blocks. Covers programming and interfacing, process-controlled and time-controlled interrupt handling. Explores communication methods and real-time operating systems. Evaluates embedded systems design requirements and specifications, reviews embedded systems emerging applications.

6. Textbook and other Supplemental Material:

Textbook:

• Class Handouts.

Supplemental material:

AUS Library Course URL:

http://aus.libguides.com/c.php?g=477080&p=3262122Supplemental material

• Class Notes are enough and will be uploaded in advance to ilearn

7. Course Learning Outcomes:

Upon completion of the course, students will be able to:

- 1. Describe and demonstrate an understanding of the principal characteristics of embedded systems computing platforms such as RISC, CISC and ARM based microcontrollers.
- 2. Program and interface embedded systems
- 3. Utilize communication methods and real-time operating systems
- 4. Apply embedded system design methodologies by engaging in requirements elicitation, and the implementation and testing of project assignments
- 5. Investigate, analyze, and present emerging embedded systems applications.

8. Teaching and Learning Methodologies:

Methods include lectures, labs, homework, quizzes, exams and class discussions.

9. Course Topics and Schedule:

Торіс	Weeks
Embedded systems computing platforms and their basic building blocks	1 st week of
	classes
Peripheral interface: Digital I/Os and PWM	2 nd week of
	classes

American University of Sharjah | College of Engineering

Process-controlled and time-controlled interrupt handling.	3 rd & 4 th weeks
	of classes
Peripheral interface: Communication Methods and Analog input/output	5 th week of
programming and interfacing applications	classes
Peripheral interface: Keypads and Displays	6 th & 7 th weeks
	of classes
Web-Server Based Applications	8th & 9th weeks
	of classes
Camera Interfacing and Programing	10 th week of
	classes
Signal conditioning circuits and driver circuits	11 th week of
	classes
Evaluate embedded system design requirements and specifications	12th week of
	classes
Group Class Projects: Implementations and Presentations on selected topics	13 th week of
in Embedded Systems applications and examinations	classes
Review embedded systems emerging applications and real-time operating	14 th & 15 th
systems.	weeks of
	classes
Review	16 th week of
	classes
Total:	16