Faculty of Engineering and Technology
Department of Electrical and Computer Engineering

Course Information	
Course Title	**Computer Design Lab**
Course Number	ENCS 4110
Prerequisite	ENCS2380
Semester	First Semester 2024/2025
Instructor	Dr. Abualsoud Hanani Dr. Abdel Salam Sayyad Dr. Jamal Seyam Dr. Ayman Hroub Dr. Wasel Ghanem

Course Objectives

- To become familiar with basics of Microprocessor and microcontrollers.
- To practice ARM Assembly programming
- To study and program the main ARM-based controllers.
- To be familiar with Microprocessor-based systems and applications
- To be familiar with Microprocessor related concepts by practical issues using Arduino

ABET OUTCOMES
B: Ability to design and conduct experiments, analyze and interpret data,
E: Ability to identify, formulate and solve engineering problems.
K: Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Exp. no	Topics	Report?
Exp1	Introduction to ARM Assembly Language and Keil uVision5	
Exp2	ARM Data Processing Instructions - Arithmetic Operations	Report 01 (one exp)
Exp3	ARM Flow Control Instructions	

Exp4	ARM Addressing Modes	
Exp5	ARM Subroutine and Stack	
Exp6	- TM4C123G ARM controller - Basic I/O - Switches & LEDs	Report 02 (one exp.)
Exp7	- TM4C123G board - GPIO - External Interrupt	
Exp8	- TM4C123G - Internal interrupts - Timers	
Exp9	- TM4C123G - LCD Interfacing with TM4C123 - LCD	Report 03 (one exp.)
Exp10	- TM4C123G - ADC - LCD - Potentiometer	
	Make up	
Final Practical		

Required Software Tool:

In all of the experiments, the Keil uvision version 5.0 (or later) will be used. Every students has to download and install it on his/her personal laptop. In addition, in order to be able to use TM4C123G board (Exp6-Exp10), you need to install the library into the Keil that supports it, and also you need to install the Stellaris ICDI driver so your computer can communicate with the TM4C123G board.

You can download the Keil uvision software and the required library and driver at the following link:

https://drive.google.com/drive/folders/1eaQs0iVE4mrViXiC1cl5nmyBw2Jz3n1o?usp=sharing

Assessment Policy		
Assessment Type	**Notes**	**Weight**
Reports	• 3 reports, written individually	15%
In-lab Practical Tasks (ToDo's)	• Practical tasks, in-lab and post-lab	25%
Performance and In Lab participation	• Your performance will be monitored during the lab, and your results may be discussed after the lab.	10%
Quizzes	• Minimum three quizzes cover the theory part of the experiments	20%
Final Practical Exam	To be announced at the end of the semester	30%

Report Format

Three reports are required from each student on pre-specified experiments. The report is individual and the report mark will only be given to one student.

Your report must include:
- Objectives
- Brief theoretical review
- Prelab
- All experimental results and circuit schematics.
- Solutions for tasks involved
- Discussion and Evaluation
- Conclusions

ميثاق شرف الأمانة الأكاديمية

بموجب التسجيل في هذا المساق يلتزم الطالب باحترام أنظمة وقوانين الجامعة وخاصة تلك المتعلقة بالأمانة العلمية وعدم الغش. ويتحمل الطالب مسئولية ذاتية، أدبية وقانونية، عن المحافظة على الأمانة العلمية وذلك بالامتناع عن الغش في الامتحانات والوظائف والتقارير، وعدم السماح لغيره من الطلاب بأن ينقلوا عنه في الامتحانات والوظائف والتقارير.

يستوجب الغش أو محاولة الغش التوبيخ والإجراءات القانونية المنصوص عليها في تعليمات الأمانة الأكاديمية التي أقرها مجلس الجامعة، وتشمل ما يلي:
1. **العقوبة الأكاديمية:** يقررها مدرس المساق وقد تصل إلى علامة رسوب في المساق.
2. **العقوبة التأديبية:** تقررها لجنة النظام في الكلية وقد تصل إلى الفصل المؤقت أو النهائي من الجامعة.

بموجب تسجيلي في هذا المساق واستلامي لهذا الميثاق أتعهد أمام الله أن أحافظ على الأمانة الأكاديمية بأن أمتنع عن الغش، وأن لا أتسامح مع أي محاولة للغش من قِبل الآخرين.