Syllabus

2024 Fall

Course	Embedded Software & Design	**Professor**	Jeong Hong
Course No	SOC3050	**Class No**	
Schedule	SAT12	**Grading Eval.**	Relative Evaluation
Other Information			

Profile	- PhD, MIT (Massachusetts Institute of Technology), EECS (Electrical Engineering and Computer Science), USA - MS, EE, KAIST (Korea Advanced Institute of Science and Technology), Korea - BS, EE, SNU (Seoul National University), Korea - Professor, EE, BJTU (Beijing Jiaotong University), China - Professor, EE, POSTECH (Pohang University of Science and Technology), Korea - Professor, EE, KNU (Kyungbook National University), Korea
Course Objectives	The mendatory and fundamental course for CS and EE for Computer Hardware and Software study. - Understanding Embedded Architecture - Coding Embedded System - Application on Embedded System
Course Description	As the most popular devices, the AVR microprocessor will be studied. An Emulation and an Atmega microcontroller board will be used for hands-on experiments. The major topics are as follows. - Instruction set architecture - Timer programming - Interrupt programming - Serial port programming - Interfacing the external I/O devices - Applications to Games and IoT - All with Assembly language and C/C++ language. The lecture contents might be variable depending upon situations.
Textbooks	
Other Texts and References	
Class Structure	- First Lecture and next Lab (bring your Labtop) unless otherwise notified - Project - Exams
Notes	Course failure: Any one of the following behavior is destined to Failure, - Academic rule: 1/4 Absent days without AA approval within a week from absent date - Any of the following: No Labs, No Project, No Midterm exam, No Final Exam - Cheating in Labs, Homeworks, Projects, and Exams. - Other activity harming the course - Class door will be closed after 5 min of class Course contents and evaluation criteria may be variable depending on situations during the semester.
ABEEK	

Grading							
Mid-term	**Final exam**	**Attendance**	**Assignments**	**Quiz**	**Discussion**	**ETC**	**Total**
30 %	30 %	10 %	20 %	0 %	0 %	10 %	100 %

S y l l a b u s			
Week	**Content**	**Class**	**Notes**
1	**Theme**	Introduction to Computing	
	Class Details	Lecture and Review	
	Tests		

2	**Theme**	The AVR Micro-controller: History and Features	
	Class Details	Lecture and Lab	
	Tests	Lab	
3	**Theme**	AVR Architecture and Assembly Language Programming	
	Class Details	Lecture and Lab	
	Tests	Lab	
4	**Theme**	Branch, Call, and Time Delay Loop	
	Class Details	Lecture and Lab	
	Tests	Lab	
5	**Theme**	AVR I/O Port Programming	
	Class Details	Lecture and Lab	
	Tests		
6	**Theme**	Arithmetic, Logic Instructions, and Programs	
	Class Details	Lecture and Lab	
	Tests	Lab	
7	**Theme**	Midterm Exam	
	Class Details		
	Tests	Lab	
8	**Theme**	AVR Timer Programming in Assembly and C	
	Class Details	Lecture and Lab	
	Tests		
9	**Theme**	AVR Interrupt Programming in Assembly and C	
	Class Details	Lecture and Lab	
	Tests	Lab	
10	**Theme**	AVR Serial Port Programming in Assembly and C Power Point	
	Class Details	Lecture and Lab	
	Tests	Lab	
11	**Theme**	LCD and Keyboard Interfacing	
	Class Details	Lecture and Lab	
	Tests	Lab	
12	**Theme**	ADC, DAC, and Sensor Interfacing	
	Class Details	Lecture and Lab	
	Tests	Lab	
13	**Theme**	Relay, Optoisolator, and Stepper Motor Interfacing with AVR	
	Class Details	Lecture and Lab	
	Tests	Lab	
14	**Theme**	Input Capture and Wave Generation in AVR	
	Class Details	Lecture and Lab	
	Tests	Lab	
15	**Theme**	Final Exam	
	Class Details		
	Tests		

16	**Theme**	Makeup	
	Class Details		
	Tests		