Syllabus(2016-1st semester)

Course	Smart Software Project	Department	Computer Science & Engineering	Office Hours	목요일 오후 3:30 - 5:00
Course No. and Class	37269-01	Hours	4.5	Academic Credit	3.0
Professor	HyungJune Lee	Office		Asan Engineering Building 321-1	
Telephone	02-3277-6644	E-MAIL		hyungjune.lee@ewha.ac.kr	
Value of competence		Keyword			

1. Course Description

This course is a hands-on embedded system programming and project course based on an Arduino hardware and software platform. The objective of this course is to provide students with the basics of de

2. Prerequisites

There are the following prerequisites for taking this course:
- Computer Programming and Lab(36339) or any C-language course is a prerequisite course.
- Computer Engineering Design(36503) is a prerequisite course.
- Computer Architecture(20493) is a recommended course.

Any prior knowledge of Android programming is not necessary.

3. Course Format

Lecture	Discussion/Presentation	Experiment/Practicum	Field Study	Other
40 %	10 %	50 %	0 %	0 %

- explanation of course format :

This course consists of a lecture class and a lab session each week:
- Lecture class: to provide fundamental and advanced concepts of low-level embedded hardware/software and high-level software algorithms
- Lab session: to practice in-lab programming exercises of controlling the SmartCAR Arduino platform

Arduino Mega 2560-based SmartCAR with Nexus 7 Android tablet will be used for lab classes and a term project. Two students will form a team for the labs and the term project, and will share to use one

4. Course Objectives

The objective of this course is to provide students with the basics of designing, interfacing, configuring, and programming real-world embedded systems. Students will have valuable opportunities of applyi

5. Evaluation System

Midterm Exam	Final Exam	Quizzes	Presentation	Projects	Assignment	Participation	Other
25 %	0 %	0 %	0 %	50 %	20 %	5 %	0 %

* Evaluation of group projects may include peer evaluations.

- explain of evaluation system

- There will be weekly lab assignments, midterm, project proposal, final report, and term project.
- Late homework submissions will be acceptable up to 3 days with the score penalty of –30%.
- This course syllabus is subject to change, and the instructor reserves the right to change the policy.

6. Required Materials

Textbook:
- There is no textbook required for this course. We will use lecture slides that will be posted prior to each class.

7. Supplementary Materials

References:
- Official Arduino website –http://www.arduino.cc/
- Arduino Mega 2560 website – http://arduino.cc/en/Main/arduinoBoardMega2560/
- Any Arduino-related programming book

8. Optional Additional Readings

9. Course Contents

Week	Date	Topics, Materials, Assignements
Week 1	2016/03/07(MON)	- Course introduction - Arduino introduction: platform & programming environment
		- Embedded system overview & Source management in collaborative repository (using GitHub)

Week 2	2016/03/14(MON)	Embedded system overview & Source management in collaborative repository (using GitHub) - Lab 1: Arduino Mega 2560 board & SmartCAR platform
Week 3	2016/03/21(MON)	- ATmega2560 Micro-controller (MCU): architecture & I/O ports, Analog vs. Digital, Pulse Width Modulation - Lab 2: SmartCAR LED control
Week 4	2016/03/28(MON)	- Analog vs. Digital & Pulse Width Modulation - Lab 3: SmartCAR motor control (Due: HW on creating project repository using GitHub)
Week 5	2016/04/04(MON)	- ATmega2560 MCU: memory, I/O ports, UART - Lab 4: SmartCAR control via Android Bluetooth
Week 6	2016/04/11(MON)	- ATmega2560 UART control & Bluetooth communication between Arduino platform and Android device - Lab 5: SmartCAR control through your own customized Android app (Due: Project proposal)
Week 7	2016/04/18(MON)	Midterm exam
Week 8	2016/04/25(MON)	- ATmega2560 Timer, Interrupts & Ultrasonic sensors - Lab 6: SmartCAR ultrasonic sensing
Week 9	2016/05/02(MON)	- Infrared sensors & Buzzer - Lab 7: SmartCAR infrared sensing
Week 10	2016/05/09(MON)	- Acquiring location information from Android device & line tracing - Lab 8: Implementation of line tracer
Week 11	2016/05/16(MON)	- Gyroscope, accelerometer, and compass sensors - Lab 9: Using gyroscope, accelerometer, and compass sensors
Week 12	2016/05/23(MON)	- Project - Team meeting (for progress check)
Week 13	2016/05/30(MON)	- Project - Team meeting (for progress check)
Week 14	2016/06/06(MON)	Memorial Day.
Week 15	2016/06/13(MON)	Project presentation & demo (Due: source code, presentation slides, & poster slide)
Makeup Classes 1	2016/06/07(TUE)	Course wrap-up & next steps

10. Course Policies

* For laboratory courses, all students are required to complete lab safety training.
- This course will be offered in English.
- iPad will be used to provide students with dynamic education environments.

11. Special Accommodations

* According to the University regulation #57, students with disabilities can request special accommodation related to attendance, lectures, assignments, and/or tests by contacting the course professor at th

* The contents of this syllabus are not final—they may be updated.