ENGG1100
Introduction to Engineering Design

Course Introduction

By Dr. Anthony SUM

Department of Computer Science and Engineering

Overview

- This is a laboratory and project based course with lectures

- This course aims to allow first-year engineering students to learn problem-solving skills with engineering design methodology

- You will gain experience in problem-solving by developing a ball-catching robot car using finite-state machine (FSM)

Learning Outcomes

- Understand basic mechanical design and electronics principles and appreciate their importance;
- Gain basic engineering skills on the use of CAD software, instrumentation, hardware construction and testing;
- Understand engineering design processes and systematic approach to solving engineering problems;
- Learn about teamwork by working and communicating effectively with peers in a team.

Course Information

	Sections	Time	Location	
Lectures	All	1:30pm-2:15pm	LSK LT6	
	Sections	**Time**	**Location (Lab 1 & 2)**	**Location (Lab 3 onward)**
Laboratory	G	9:30am-12:15pm	SHB123	SHB102
	H		ERB909	SHB114AB
	I		SHB904	SHB210
	J	2:30pm-5:15pm	SHB123	SHB102
	K		ERB909	SHB114AB
	L		SHB904	SHB210

Course Instructors

Section	Instructor	Department	Email
G	Dr. LAM Tak Kei	CSE	tklam@cse.cuhk.edu.hk
H	Prof. LI Xiang	MAE	xiangli@mae.cuhk.edu.hk
I	Prof. SUN Xiankai	EE	xksun@ee.cuhk.edu.hk
J	Dr. SUM Anthony	CSE	kwsum@cse.cuhk.edu.hk
K	Ms. NGAN Lai Yin	EE	lyngan@ee.cuhk.edu.hk
L	Prof. SUN Xiankai	EE	xksun@ee.cuhk.edu.hk

- Course Coordinator
  - Dr. SUM Anthony (CSE), kwsum@cse.cuhk.edu.hk

Course Assessment

Items	%	Details
Lecture	3%	Attendance (6x0.5%, excluding Wk 1 & 2)
Lab	7%	Attendance (7x1%, excluding Wk 1, & 2)
	15%	Lab Sheet (5x3%, Lab3, 4, 5, 6 & 7)
3D Design Homework	5%	HW1
	5%	HW2
Midterm Quiz	25%	40-min Multiple Choice
Project	5%	Attendance (5x1%, 4 Project Weeks & Demo)
	5%	Milestone (5x1%, 4 Project Weeks & Car Assembly)
	20%	Demo
	10%	Report (including state diagram & source code)
Total	**100%**	

Course Schedule

Week	Date	Lecture	Lab	Important Events
1	8 Jan	Course Introduction	No lab	Release of Project Specification
2	15 Jan	Engineering Drawing	Lab 1: Mechanical Drawing I	Release of HW1, Group Forming in Lab
3	22 Jan	Lab Safety and Basic Electronics	Lab 2: Mechanical Drawing II	Deadline of Group Forming in Lab Release of Project Board for Soldering
4	29 Jan	Digital Logic	Lab 3: Electronic Basics	
5	5 Feb	Finite State Machine	Lab 4: Digital Logic	Deadline of HW1, Release of HW2
6	12 Feb	Sensors and Actuators	Lab 5: Finite State Machine	
7	19 Feb	Lunar New Year Holiday	Lunar New Year Holiday	
8	26 Feb	Project and Final Report Briefing	Car Assembling	Deadline of HW2
9	5 Mar	Midterm Quiz	Lab 6: Sensors	
10	12 Mar	No Lecture	Lab 7: Actuators	
11	19 Mar	No Lecture	Project Week 1	
12	26 Mar	No Lecture	Project Week 2	
13	2 Apr	Easter Holiday	Easter Holiday	
14	9 Apr	No Lecture	Project Week 3	
15	16 Apr	No Lecture	Project Week 4	
16	24 Apr (Tue)	No Lecture	Project Demo	Deadline of Final Report

Deadlines

Item	Deadline
Lab Sheets (Group)	Before lab session: Print and read the lab sheet; Within lab session: Submit the lab sheet in hardcopies
HW1 (Individual)	Before 6:00pm on 5 Feb: Upload files to Blackboard
Project Board Soldering (Group)	Before 5 Feb for Lab 4
HW2 (Group)	Before 6:00pm on 26 Feb: Upload files to Blackboard
Report (Group)	24 Apr (Tue) Before demo: Submit report (state diagram) in hardcopies After demo: Upload source code to Blackboard

Laboratory

- Laboratory safety is very important! Please refer to of the University Safety & Environment Office (http://www.cuhk.edu.hk/useo/) for safety instructions

- No eating or drinking in the laboratory. No slippers, sandals or flip-flops are allowed in the laboratory

- Laboratory preparation is mandatory for you to successfully conduct the lab exercises. Before each lab, please make sure you
  - read the lab manual. You will not have enough time if you have not read the manual beforehand.
  - print the lab sheet and bring it with you for each lab. You will need to hand in your completed the lab sheet at the end of each lab.

Attendance

- Faculty Policy:
  - at least 50% the lectures and 50% of the labs attendance; OR
  - FAIL
- Attendance will be taken in the first 15 minutes of lecture/lab sessions
- Late arrivals will be counted as absence
- Students' responsibility to take attendance pro-actively

Leave and Mark Appeal

- If you need to apply for a planned leave…
  - Email the supporting document to the instructor/coordinator before the absent class
- If you are ill…
  - Email the medical certificate to the instructor/coordinator within 7 days after the absent class
- If you have any objection to the attendance/marks…
  - Email your concerns to the instructor/coordinator within 7 days after mark announcement
  - No change will be made afterwards

Faculty Policies

- ENGLISH is the default medium of instruction for lectures and tutorials in all engineering courses, both undergraduate and postgraduate.

- ATTENDANCE requirement has been imposed for all faculty foundation courses, both 1000- and 2000-level. Failing in attendance will fail the whole course regardless of course performance!

- Attendance requirement may have been imposed for individual departmental courses, check the information with the course teacher.

Academic Honesty

- Zero Tolerance
  - Plagiarism, cheating, misconduct in test/exam will be reported to the Faculty Disciplinary Committee for handing.
- Consequences
  - Zero marks for the concerned assignments/test/exam/whole course, reviewable demerits, non-reviewable demerits, suspension of study, dismissal from University.
- University Policy to Academic Honesty
  - http://www.cuhk.edu.hk/policy/academichonesty/

Student/Faculty Expectations

- Let's join hands to create a positive, respectful, and engaged academic environment inside and outside the classroom.

- Full version of Student/Faculty Expectations on Teaching and Learning
  - http://star.erg.cuhk.edu.hk/upload/StaffStudentExpectations.pdf

ELITE Stream

- All outstanding students, both new and current students are welcome!

- Privileges
  - Exclusive ESTR courses, scholarships, overseas experiential trips, personal development trainings, etc.

- Application and Enquiries
  - http://www.erg.cuhk.edu.hk/erg/Elite
  - 6/F, Faculty of Engineering, Ho Sin Hang Engineering Building