

San Francisco State University
School of Engineering
ENGR 121: Gateway to Computer Engineering

Bulletin Description:

ENGR 121: Gateway to Computer Engineering (Laboratory. 1 unit)

- Hands-on introduction to embedded computer systems.
- Basic laboratory instrumentation, electronic circuit assembly, measurement, and testing.
- Introduction to hardware and software of robots.

Course Objective:

This activity course is intended to get students interested in the field of computer engineering as they design, construct, and program an autonomous robot (Parallax Bot-Bot robot).

A series of hands-on activities and challenges relevant to real-world applications are designed to introduce students to the basics of building circuits, programming microcontrollers, and robotic design.

Specific Learning Outcomes:

Students completing the course successfully will

- demonstrate a basic understanding of computer systems, including both hardware and software and their interactions with each other.
- demonstrate the abilities to define and describe basic electrical terms, and construct simple electronic circuits from a schematic.
- demonstrate the abilities to describe types of sensing and control devices.
- acquire hands-on experience working with electronic components and robot programming.
- be aware of the importance of “soft” skills needed to succeed academically and professionally, including study skills, time management skills, stress management skills, communication skills, problem solving skills, and team work skills.

ENGR 121-01 Spring 2014

Instructor: Xiaorong Zhang, Ph.D.
Office: Trailer Q (temporary, T-Q in the campus map)
Office Hours: TBD
E-mail: xrzhang@sfsu.edu
Course Website: <https://ilearn.sfsu.edu>
(All lecture slides, supplementary materials, and assignments are posted on iLearn.)

Required Course Material

Boe-Bot Robot Kit – USB Version (item code 28832)

<http://www.parallax.com/Store/Robots/AllRobots/tabid/128/CategoryID/3/List/0/SortField/0/Level/a/ProductID/296/Default.aspx>

Class Schedule

ENGR 121-01: Friday 12:10-13:50
 Location: LIB 281

Tentative Weekly Schedule

Week	Date	Activity Schedule
1	1/31	Overview and self-introduction
2	2/7	Electronic components and assembling
3	2/14	Boe-Bot Chapter 1: Your Boe-Bot's Brain
4	2/21	Boe-Bot Chapter 2: Your Boe-Bot's Servo Motors
5	2/28	Boe-Bot Chapter 3: Assemble and Test Your Boe-Bot
6	3/7	Boe-Bot Chapter 4: Boe-Bot Navigation
7	3/14	Challenge 1: Navigating a fixed course
8	3/21	Quiz 1, Boe-Bot Chapter 5: Tactile Navigation with Whiskers
9	3/28	Spring Break
10	4/4	Challenge 2: Tactile Navigation
11	4/11	Boe-Bot Chapter 6: Light Sensitive Navigation with Phototransistors
12	4/18	Challenge 3: Light-Sensing Navigation
13	4/25	Boe-Bot Chapter 7: Navigating with Infrared Headlights
14	5/2	Challenge 4: Infrared-Sensing Navigation
15	5/9	Quiz 2, Boe-Bot Chapter 8: Robot Control with Distance Detection
16	5/16	Challenge 5: Maze Navigation

Note: This schedule is subject to change. Information given in class supersedes this schedule.

Important Dates

Last day to add/drop: Feb. 7, 2014
 Last day to withdraw: Apr. 25, 2014

Grading Policy:

Grades will be based on total points earned through the following activities:

Challenges	50%
Quiz 1	15%
Quiz 2	15%
Assignment and Participation	20%
Total	100%

Grade assignment:

A from 100 to 94 A- from 93 to 90

B+ from 89 to 87	B from 86 to 84	B- from 83 to 80
C+ from 79 to 77	C from 76 to 74	C- from 73 to 70
D+ from 69 to 67	D from 66 to 64	D- from 63 to 60
F below 60		

Notes on grading:

- Quizzes will be done online through Web Connect at your convenience. All quizzes will be available for a specified period of time (e.g. Monday to Friday of the week the quiz is scheduled). Once you start the quiz, you will be limited to 40 minutes to complete the quiz. Note: Time limits are subject to change depending on the level of difficulty of the problem. Generally, there will be **no make-up quiz and no incomplete** grades given. If you miss a quiz, you must notify the instructor before the quiz or, if physically impossible, soon after. If you have an acceptable, documented excuse, you may be given a make-up quiz. If you do not have an acceptable reason for missing the quiz, you will receive zero points for the quiz.
- Class attendance is mandatory. Attendance will be checked randomly without prior notice.

Group Work

The activity course emphasizes student hands-on experience using Boe-Bot as the main learning tool. The students are required to form groups to complete all the activities and challenges.

- Ideal group size: 3 (not less than 2)
- Group members must share work equally and each member must know all work done by the group.
- You may not be able to complete all the work during class time so choose partners who you can work together for a few hours a week on projects.
- At least one of the members should have a laptop computer (PC with windows OS).
- Get a locker to store Boe-Bot so any of the members can work on it anytime.
- Discuss how to acquire and share the cost of Bot-Bot.

Classroom behavior

- Students are expected to attend all classes on time.
- Students are encouraged to ask questions, express their ideas and comments on subjects under discussion.
- No cell phone calls and no food are allowed during the class.

Policies on Plagiarism

Plagiarism is defined as using someone else's ideas or work as one's own without giving proper credit to the source. The source include public (books, journals, magazines, newspapers, internet, etc.) as well as private (unpublished reports, internal documents, personal work, etc.) materials. The instructor will not accept excuses such as "I forgot to give credit to ...," "It's an oversight," or "It's a clerical error."

Students are solely responsible for materials submitted for the course so "My roommate must have done that without my knowledge" is not an acceptable excuse either. That is, no excuses will be accepted if plagiarism is discovered. If a submitted work is found to contain plagiarized material, the work will receive zero credit and the student may be reported to the Student Judiciary Affairs for disciplinary actions. Cheating on tests will also be reported to the Student Judiciary Affairs. Disciplinary actions may include disqualification from the university.

Disability Policy Statement

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor.

The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu).

(<http://www.sfsu.edu/~dprc/facultyfaq.html#1>)

Policy on observance of religious holidays

If a student wishes to observe religious holidays and such observances require the student to be absent from class activities, it is the responsibility of the student to inform the instructor, in writing, about such holidays during the first two weeks of the class each semester. If such holidays occur during the first two weeks of the semester, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent.