

Springfield Technical Community College
School of Science, Technology, Engineering & Math
Department of Electrical Engineering Technology
Course Syllabus

Course Title: PCs, Programming and Robots

Course Credits: Lecture 2 cr., Lab 1 cr.

Course Number: EET-101 & L

Professors: Rick Jagodowski
Barry Mason

Meeting Days/Times: Lecture: Online

Semester: Fall 2020

Meeting Location: Lecture: Online **Lab:** Bldg. 20 Rm. M118.

Class Zoom Session: Fridays from 9:10-10:00AM. Link is provided in Blackboard

Labs: EET-101L-D01: T. 2:30-5:00

EET-101L-D02: Th. 2:30-5:00

EET-101L-E51: Th. 6:00PM-8:30PM (B. Mason)

NOTE: For Fall 2020 semester, please see the Addendum at the end of this syllabus.

Catalog Description:

This course will provide the student with the basic knowledge about modern PC operation and upgrades as well as introduce them to the world of programming and Robots. The first few weeks of the course will introduce the basic components of a PC with emphasis on upgrade ability. The rest of the course will have students build, program and test their own BoEBot from Parallax. The interaction with the BoEBot will demonstrate how the PC is used as a control and communication portal, how hardware is controlled by software, and how, through the use of various sensors, robots can be designed to be autonomous.

Course Description:

The first several weeks of this course will introduce the student to the basic components and operation of a typical personal computer. Students will learn the basic functions of major hardware components and how to remove/install them, basics of current operating systems and the purpose of device drivers. The remainder of the course will focus on the construction, programming and debugging of the Parallax BoeBot. This will introduce the student to the basics of robot operation, programming fundamentals and using the PC as an interface between systems. Students will put theory into practice during the 3 hour lab session.

Pre-requisites: None.

Corequisite(s): EET-101L

Student Learning Outcomes (SLO's)

Upon successful completion of this course, students will be able to:

- identify basic hardware components of a PC.
- install and remove common PC hardware components.
- understand the relationship among operating systems, applications and device drivers.
- perform basic construction skills and electronic component identification.
- understand fundamental programming concepts and hone debugging skills.
- understand how the modern PC can serve as an interface between modern systems.
- reinforce professional conduct in lecture and laboratory environments.
- apply "hands-on" skills necessary for technicians in the electrical and electronics industry.
- use professional written and oral communication skills.

Text & Materials:

There is no specific text for the course. Much of the content will be presented using online resources, so internet access is expected.

Lab Manual & Parts: Parallax BoeBot kit, available from www.Parallax.com, Item #: [28832](#). If you are ordering this kit on your own (not purchasing from the STCC bookstore) you may be able to find it at reduced prices from online retailers. *Please make sure you order the correct kit with ALL components.*

The lecture content will be supplemented with handouts, web-links, pdfs, simulations and other relevant information. Most of this material will be posted on the Forums at cset.stcc.edu/forums/. Within the first two weeks of classes you will create an account and be required to use the Forums throughout the semester. Students should regularly check the Forums at cset.stcc.edu/forums/ for current materials for EET-101. You are also expected to be able to use your STCC e-mail account.

***Office Hours:** (See Addendum for changes.)

Bldg. 20 Rm. M120. Office hours posted on the door. 755-4594 E-mail: Jagodowski@stcc.edu
Hours are posted on the door & in Blackboard.

***Grading Policy** (See Addendum for changes.)

*** Attendance:** Attendance is mandatory. Students absent from more than 3 classes may be removed from the class at the professor's discretion. It is the student's responsibility to make arrangements to make up any missed work. Missed work may only be made up if the professor allows. The schedule for any make up work will be at the instructor's discretion. If the student knows in advance he or she may not be in lecture it is the student's responsibility to notify the professor in advance. Attendance will be taken at each lecture & lab session. Be sure to sign in or follow the lab instructor's guidelines to properly record your attendance.

***Professionalism:** The "Professionalism" portion of the grade may be reduced due to being late to the class, "fooling around", inappropriate language or conduct in or out of class and lab, being a disruption to the educational process, having non-course related conversations during lecture/lab, or similar violations of the course rules & policies. During exams and quizzes we do not allow the use of cell phones or any device with wireless, infrared or similar communications capability.

*** Policy on course disruptions:** Students are expected to act in a respectful and mature manner. Course disruptions, loud or disruptive behavior, intimidation, violation of the policies and procedures set down in the STCC Student Handbook, or similar problems will result in the student being removed from the lab or lecture.

Be sure to turn off all cell phones or other electronic devices before entering the lecture or lab. In many cases the professors allow cell phones during lab but not while lectures are in process. Talking, texting or causing disruptions while lecture is in process is also considered disruptive. At the professor's discretion he or she may attempt to correct the student's behavior or remove the student from the class.

The following is the STCC Code of Conduct from www.stcc.edu:

"Springfield Technical Community College recognizes that all students, as members of the college community, enjoy the freedom of speech and assembly, freedom of association, freedom of the press, right of petition and the right of due process. These rights do not come without responsibilities and respect for others in the College community. Attendance at the College is a privilege and not a right, and enrollment carries with it obligations in regard to conduct, both in and out of class. Students are responsible for knowing and understanding the contents of this Code. Students are responsible for abiding by the laws governing the College and are expected to observe standards of conduct set by the College."

* **Professional behavior:** Students are expected to act in a professional and mature manner at all times, in and out of class and lab. Improper behavior will result in a reduced grade and if not corrected may result in removal from the course.

* **Due Dates:** Late work may be depreciated by 25% every week or part of a week it is late. Solutions to homework and labs may be distributed. Once the solution is distributed no further homework will be accepted. It is the student's responsibility to be aware of all work assigned and the due dates.

* **Quality:** Submission of poor quality work will not be accepted. Submissions which do not meet minimum documentation standards set forth in class, are incoherent, or are illegible will be returned [not graded] to the student. These cases are treated as if no work was submitted.

* **Academic Honesty:** All students are assumed to do their own work. Using other's work is permitted, under some circumstances, with proper credit to the original author(s). Academic dishonesty of any manner is not tolerated. In the event it is discovered by the professor ALL PARTIES INVOLVED receive a grade of "F" [0.0]. No distinction is made between those "cheating" and those being "cheated from". If a student believes his/her work is being borrowed without consent it is her/his responsibility to report the incident. This is the only means to escape the consequences. All incidents are examined on a case-by-case basis by the professor whose decision is final.

* **Homework:** Homework will be assigned frequently. Students are encouraged to keep their completed homework assignments in a notebook. The homework notebook may be collected at mid-semester and/or final exam time.

* **Quizzes:** Quizzes will be unannounced and given frequently. Quizzes will be based upon material covered in lecture or homework/lab assignments. There are no make-ups given for missed quizzes. The two lowest quiz grades will be dropped so that a missed quiz or two should not significantly effect your grade. Quizzes may be given in lecture and lab.

* **Exams:** There are two exams during the semester: a mid-semester and a comprehensive final exam. These exams may be in-class, take home or a combination. They may also consist of closed book & notes or open book & notes formats. Specifics for each exam will be given at least one week before the scheduled exam.

* **Labs:** Lab experiments will be performed each week. Students are responsible for completing each assignment. Unless otherwise stated, lab experiments and reports should be completed and submitted one week after they are assigned.

Selected lab experiments will require a formal written lab report. Each lab report must be created electronically (word processor) and any diagrams and drawings are to be done electronically as well (such as Visio or a CAD package.) An ethical observation of each student's performance will also be assessed (see end of syllabus for more detail). Students are expected to follow directions and procedures. All lab reports must follow the supplied standard, be on 8.5"x11" paper and include a cover sheet. Lab experiments will be performed each week. Students are responsible for completing each assignment. Unless otherwise stated, lab experiments should be completed and submitted one week after they are assigned. Due dates for the formal lab reports will be set for each report.

Grade Evaluation: *(See Addendum for changes.)*

Lecture:	Professionalism:	20%	Lab:	Professionalism:	20%
	Homework:	5%		Lab Experiments:	50%
	Quizzes:	25%		Reports/Projects:	30%
	Exams (2):	50% (25% each)			

Grade Determination:

Lecture grade X 0.70 + Lab grade X 0.30 = Final Common Course/Lab Grade

Please note: You will receive a common grade for the lecture & lab portions calculated based upon the weights and formula given above.

Class Organization *(See Addendum for changes.)*

The course is presented in a combination lecture/lab format. Relevant questions and discussion are encouraged. Presentations may include a combination of blackboard & chalk, computer based presentations (e.g. PowerPoint) & computer simulation. Lectures and labs will include hands-on activities making use of available robotics, test & assembly equipment as well as computers and software applications. Internet research will be required for certain topics discussed in the course.

EET-101 Course Outline*

Week	Topic
1	Introduction - course objectives & safety
2	PC Computer Fundamentals: Hardware, Software, Firmware.
3	Computer Processors, Motherboards, Memory & Data Storage/BoeBot Ch. 1 & 2
4	Interfaces: serial, parallel, internal, external & wireless/BoeBot Ch. 3
5	Basic networking concepts/ BoeBot Ch. 4 BoeBot Navigation.
6	BoeBot Ch. 4 BoeBot Navigation (continued)
7	*** Mid-Term Exam ***
8	BoeBot Ch. 5 Tactile Navigation with Whiskers
9	BoeBot Ch. 6 Light Sensitive Navigation with Photoresistors.
10	BoeBot Ch. 6 Light Sensitive Navigation with Photoresistors (continued).
11	BoeBot Ch. 7 Navigation with Infrared Headlights
12	BoeBot Ch. 7 Navigation with Infrared Headlights (continued)
13	BoeBot Ch. 8 Robot Control with Distance Detection.
14	Student Presentations
15	Final Exam

*Note: The instructor reserves the right to modify the course outline as necessary to best serve the educational needs of the student. (*See Addendum for changes.*)

NOTES:

It is important that you read and understand this syllabus. Copies of this syllabus will be available on the Forums at cset.stcc.edu/forums.

It should be understood that the time to seek help with an academic problem is at the first sign of such a problem. Problems that are allowed to grow out of proportion are much more difficult to deal with and can often be insurmountable. Please make your needs known to me at the earliest possible time and DO NOT wait until a week before a test to seek help! Office hours are as posted or by arrangement.

Please note that at any time during the semester it may be necessary to alter the specified course outline. It is useful as a guide only and should not be taken as hard cold fact. Often during a semester, equipment failures and shortages of materials may hamper completion of a particular topic. We reserve the right to substitute, replace or delete any of the following scheduled lectures or labs.

Ethics criteria: In order to prepare students for the work place an ethical observation of each student will also be performed. Issues such as character, teamwork, appearance, language, productivity, respect, organizational skills, attitude, initiative, communication, courtesy and cooperation will be observed by the instructor. These criteria make up the *Professionalism* aspect of your grade.

Course Methodology and Philosophy

S.T.C.C. invests a considerable amount of resources into equipment for student and faculty use. As a member of the faculty, I will make use of all available teaching methods and tools. For lectures, most content will be delivered by a combination of Power Point/Computer Presentation and blackboard/whiteboard notes. Students are encouraged to actively participate by way of relevant questions and comments about the subject matter under discussion. It is my responsibility to make sure that the subject matter is presented in as clear a manner as possible. Your feedback is invaluable to my ability to accomplish this goal.

You, as the student, also have your share of responsibility:

Attendance: The scope of the material presented in this course is broad. Attendance is required to experience all the information as presented by the instructor. In addition, your input into the classroom discussion helps other students to better understand the material.

Preparation: It is your responsibility to complete all assignments, reading and written, in a timely manner. Thorough preparation will help instill greater confidence in the subject matter and will facilitate lively classroom discussions. Proper preparation for quizzes and tests is also expected.

Attitude and Behavior: It is your responsibility to make sure that your contributions to this course, and your attitude toward the people around you, are positive. Foul language and disruptive behavior will not be tolerated in this course. In addition, school property must be treated with respect at all times. This is especially true in laboratories. If you do not understand how to use a particular piece of equipment, you are encouraged to ask for assistance. You should report malfunctioning equipment immediately. Always return equipment and components to their proper locations. Leave your study or work area clean and neat for the next student.

Students with Special Needs

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the instructor privately to discuss your specific needs. Before any accommodations are put in place, you should contact the Office of Disability Services at 755-4785 or stop by Building 19 Room 141 to coordinate reasonable accommodations for students with documented disabilities. <https://www.stcc.edu/resources/academic-support/ods/>

***Addendum to Fall 2020 EET-101 Syllabus for Prof. Rick Jagodowski**

This addendum is being added to the Fall 2020 EET-101 Syllabus as a result of the Online Instruction initiative implemented at S.T.C.C. this semester due to the COVID-19/Corona virus.

Lecture: The lecture portion of this course is entirely on-line. During the first week of classes, we will find an agreeable time at which the majority of the class can meet for a Zoom video session once per week. This meeting will be recorded, so if you don't wish to be seen, you may turn your camera off. You are encouraged, but not required, to attend these meetings. If you can't make a meeting, you are encouraged to watch the recorded session which will be posted on Blackboard within 24 hours of the meeting. Content & topics presented for the course and including those discussed in these Zoom sessions will require your participation in the form of a *Discussion* in Blackboard. Your participation in the Discussions will be used to help determine your Attendance & Professionalism portion of your class & lab grades.

Computer: It is expected that you have access to a computer (laptop preferred) & reliable internet access.

Blackboard & CSET Forums: You will be required to use Blackboard (Bb) as well as the CSET Forums for this course. The CSET Forums will require that you register for an account within the first few weeks of the semester. Details will be forthcoming.

Attendance & Professionalism: When you are on campus this part of your grade will be evaluated based upon your physical attendance, tardiness and professional conduct while at the school. For the online part of the course this grade will reflect your participation in things such as online discussions, proper use of online resources to receive and submit assignments, communication among you, your fellow students and instructors, and your overall conduct to complete the objectives of each course.

Assignments: All online assignments will be distributed and collected using Blackboard. Please note that any multi-page assignment should be submitted as a single document, NOT separate pages. Accessing, completing and submitting these online assignments will be discussed during the first week of class.

Course Outline: All attempts will be made to maintain the course outline schedule in the main syllabus, but there may be modifications due to events beyond our control. You should be prepared for the event where we might be required to go 100% online with the course AND the labs.

Lab Exercises: As mentioned above, current plans are to have limited on-campus labs for some courses at STCC, including this one. When you are on campus, it is expected that you follow the rules and guidelines set forth by administration regarding social distancing and safety. The policies may change during the semester so it is important that you keep informed of any such changes. Here is the link for the latest STCC COVID-19 info: <https://www.stcc.edu/coronavirus/> Should administration decide that on campus labs are no longer allowed there will be additional assignments given in an attempt to compensate for the lack of a physical lab. This might require the use of simulation software, tutorial links on the web, additional research, and any other software & tools which is deemed as instructive to best replace the physical lab experience. The exact instructional methods employed will likely depend upon the timing of any such decision. Should this happen, you will receive further specific instructions within the Blackboard shell & CSET Forum posts as to the new assignments for each lab.

The S.T.C.C. faculty, staff & administration are doing what we can under these difficult circumstances to deliver content as best as possible throughout the semester. Please be patient with us and each other as we work through the challenges that are sure to face us. Feel free to voice any concerns which might arise by emailing me at Jagodowski@stcc.edu.

Tentative Hands-On Lab Schedule

Labs have been limited to 8 students maximum per section, with no more than 10 people in a classroom at a time. Be sure to social distance as much as possible and always wear your mask when inside the buildings. Follow the signage for directions as to which doors are used for entry and exit for each room. Always stay to the RIGHT when walking down hallways, and be sure to obey direction signage on the stairways (UP/DOWN).

Week #1 (9/7): Exp. #1 - PC Components

Week #2 (9/15): Exp. #2 – Introducing Hardware

Week #3 (9/22): Exp. #3 – Form Factors & Power Supplies

Week #4 (9/28): Exp. #4 – Installing Memory, HDDs & SSDs

Week #5 (10/6): BoeBot Week #1

Week #6 (10/13): BoeBot Week #2

Week #7 (10/19): BoeBot Week #3

Week #8 (10/26): BoeBot Week #4

Week #9 (11/2): BoeBot Week #5

Week #10 (11/9): BoeBot Week #6

Week #11 (11/16): BoeBot Week #7

Week #12 (11/23): BoeBot Week #8

Week #13 (11/30): BoeBot Week #9

Week #14 (12/7): BoeBot Week #10

Week #15 (12/14): BoeBot Week #11 – BoeBot Project Presentations

Week #16 (12/17-22): Final Exams