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

Course Title: Advanced Automation   **Course Number:** EET-265 & EET-265L
Course Credits: 1 cr. Lecture, 2 cr. Lab.   **Lecture Professor:** Rick Jagodowski
Date: Spring 2024   **Lab Professor:** Rick Jagodowski

Meeting Days, Times & Places:
    Lecture: Thursday, 8:30AM - 9:20AM 17/507.
    Lab EET-265L-D01: Tuesday & Thursday, 9:30AM – 12:00PM, 17/501, 505, 507.

Office Hours:
Prof. Rick Jagodowski: Bldg. 17 Rm. 633.   X-4594   E-mail: Jagodowski@stcc.edu
                              Hours are posted on the door. Other hours by appointment.

1. Catalog Description:
This project oriented course provides expanded expertise and knowledge about the growing field of automation. It is a capstone course which provides the student with the opportunity to work in teams to devise and create an automated solution to a manufacturing or process control problem. Sensors, components, devices and systems necessary for an automated process are studied. Closed-loop manufacturing systems, PLC controls, sensors, hydraulics, pneumatics and vacuum (plasmas), and vision systems are discussed. Team work, creativity, research and presentation skills are emphasized in this capstone course. **One lecture hour and 6 laboratory hours.**

PREREQUISITE: Senior level standing and graduating within one semester.
CO-REQUISITE: EET-265L

2. Course Content
This capstone course will reinforce and apply the skills learned in the previous coursework of the Electrical Engineering Technology Dept. Students will work as a team to select a project, assign roles and then complete the project. Emphasis will be placed on team building skills, communication and technical proficiency. The lecture will supplement work done in the lab. The lab portion will provide students with the time to perform the hands-on requirements of the selected project.

3. Student Learning Outcomes (SLO's)
Upon successful completion of this course, the student will be able to:
    -apply the fundamental concepts of automation using PLCs.
    -understand and apply the concepts of project development and management.
    -work effectively by applying team-building skills.
    -create professional documentation and communication skills.
    -implement problem solving skills as applied to automated systems.
    -analyze various sub-systems must work together to create a system.
    -read and create schematic diagrams.
    -use a systems-level view of complex systems for trouble-shooting purposes.

4. Grading & Performance Policy

* Attendance: Attendance is mandatory. Students absent from more than 3 classes and/or labs 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. (A) field trip(s) might be required during this semester and you are expected to attend and follow the rules set forth for attendance.

* Professional behavior: Students are expected to act in a professional and mature manner at all times. Improper behavior will result in a reduced grade and if not corrected may result in removal from the course. The grade may be reduced due to being late to the class, "fooling around", improper language, being a disruption to the educational process, having conversations during lecture, or similar violations of the course rules. This applies to activity any time you are on STCC property or representing STCC or the E.E.T. Department.

* 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 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 https://catalog.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.*"

* Due Dates: Late work is depreciated by 25% every week or part of a week it is late. Solutions to the 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.

*Quizzes & Exams: Quizzes will be given as appropriate. They will be based upon homework, lab work and research assignments. There are no make-ups allowed for missed quizzes. There will be a comprehensive Final Exam or Paper. During exams and quizzes we do not allow the use of cell phones or any device with wireless, infrared or similar communications capability.

*Progress Reports: Each student must submit a brief weekly progress report summarizing their project accomplishments and tribulations during the week. These progress reports should be submitted as posts on the "Project Progress Report" area on the Forums at *cset.stcc.edu/forums*.

* 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. If a student believes his/her work is being borrowed without consent it is her/his responsibility to report the incident to the professor. All incidents are examined on a case-by-case basis by the professor whose decision is final.

* Labs: Students are required to take EET-265L with this course. For the lab, you will work in a team to create an automation based project. You and your team will, with guidance from your professors/advisors, create an idea as to a possible project. Each team should create a "group" with your STCC Gmail account so that you may all freely exchange information and collaborate on documentation aspects of the project. Each member of the team is expected to work toward the successful completion of the project by the beginning of May. The team(s) will be required to submit a written Final Report (Team Report), perform a presentation of the system's operation, create a short video of the project operation and submit all required work to the instructor on or before the scheduled date of the Final Exam. In addition you will be required to

attend the Presentations on the date of the E.E.T. Academic Advisory Board Meeting (likely date of Wednesday, 5/15/24 or Thursday 5/16/24).

Note that you are scheduled for a total of 5 lab hours per week. You are expected to work on your team project during that entire lab time. As the semester progresses, if your team would like additional time to work on your project, please see your professor for available times. You SHOULD NOT be working on any other lab or course material during the scheduled EET-265 Lab time. Doing so without approval of your EET-265L instructor will result in a penalty to the *Professionalism* component of your grade.

Grade Evaluation:

Attendance & Professionalism	**25%**
Progress Reports/Forum Posts	**15%**
Notebooks, Quizzes & Homework	**15%**
Final Exam	**15%**
Final Project Evaluation, Presentation, Video & Report	**30%**

5. Class Organization

The course is a lecture format with the lectures often structured around topics that will support the work done in the EET-265L portion of the course.

6. Text and Equipment requirements:

There is no text used for this course. Students should have available access to a Windows compatible laptop computer to which they have administrator rights to install any needed software. There will be numerous handouts and support documentation posted on the forums at *cset.stcc.edu/forums*. It is recommended that students keep course related documents on a USB Flashdrive for convenience and security. Remember to always back-up your work to at least 2 other devices. Your home computer & your Google Drive are two suggestions, in addition to your Flashdrive.

Internet Access: It is expected that each student have internet access to do supplemental research outside of the classroom. Links to these sites will be posted on the *STCC CSET Forums* found here: *cset.stcc.edu/forums/*. If you have access at home then you may do such research at home. Otherwise it is expected that you do the research where ever necessary. The Student Success Center also has computers available for student use.

Forums: The Electronics Group of STCC maintains Forums at *cset.stcc.edu/forums/*. Every student in the class will be required to create an account to access and post on these forums. These accounts will be created within the first couple of weeks of classes.

Supplemental Text & Materials:

The instructor will supply web links and pdf files for supplemental information via the Forums at *cset.stcc.edu/forums/* Students should have a USB Flash Drive to save the files for the electronic documentation distributed and to keep their work backed up. Daily backups of these files is highly encouraged. Losing your flash drive IS NOT an acceptable excuse for not turning in work.

You are expected to have your own DMM (digital multimeter) and bring it to lab each session.

For working on your project, the majority of hand-tools, power tools and supplies needed are available in the E.E.T. department, or can be acquired with sufficient notice. If you wish to bring in your own personal tools, please let your professor know so that they can be examined for safety concerns and kept properly secured (if left on campus). POWER TOOLS ARE ONLY TO BE USED WHILE UNDER THE SUPERVISION OF YOUR LAB PROFESSOR!

It is expected that each student have access to a laptop computer which can run the software needed to communicate with the necessary PLCs, robots, Keyence Laser Safety Scanners, microcontrollers and any other devices used for your project. Therefore, it might be necessary for you to install additional software on your computer for these purposes or for others. Make sure you keep all files backed up to minimize the damage caused by data-loss. It's recommended that you share critical files with at least one other member of your group.

7. STCC Course Schedule*

Week	Topic
1	Syllabus, Policies & Introduction to course/Project Discussion.
2	Safety & Scheduling
3	Sensors
4	Sensors
5	Sensors & Discussion of Project(s)
6	Sensors & Discussion of Project(s)
7	Sensors & Discussion of Project(s)
8	**** SPRING BREAK******
9	Intro to Work Cell Basics, Work Area Organization, Work Cell Support
10	Vacuum, Pneumatic & Hydraulic Systems
11	Robot and System Integration & Project Discussion
12	Project Discussions, Related Content
13	Project Discussions, Related Content
14	Project Discussions, Related Content
15	Project Discussions, Related Content
16	**** Final Exam & Project Presentation ****

*NOTE: The above outline may be modified/shuffled as needed to best serve the educational needs of the students and to respond to project related goals.

Special days for Spring 2024 Schedule from the Academic Calendar found here:

Monday, January 22: Spring 2024 Classes Begin.
Monday, February 19: President's Day Holiday - College is closed.
Monday-Saturday, March 10-16: Mid-Semester Break - No classes.
Monday, April 15: Patriots Day Holiday - College is closed.
Tuesday, April 16: All classes follow a Monday schedule.
Tuesday, April 23: Last Day to Withdraw from 14 week Spring classes.
Thursday, April 25: Last day to file a Candidate for Graduation Form for May 2024 Commenement
Tuesday, May 7: Last Meeting Day of Classes
Thursday-Tuesday, May 9-14: Final Exams for Spring Classes
Wednesday, May 15 (*most likely date*): EET Advisory Board/Adv. Automation Project Demonstrations
Sunday, May 19: Final Grades Due
Wednesday, May 29: Honors Convocation
Thursday, May 30: Commencement

8. 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 Rm. 141 to coordinate reasonable accommodations for students with documented disabilities.

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 instruction will be a combination of Power Point and blackboard/whiteboard. 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.