**MT3.897: Capstone Project I**

Linn-Benton Community College – Fall 2019

3 Credit Hours

**Instructor: Ken Dickson-Self** **OFFICE HOURS:**

Office: IA-112ASee Instructor Website for schedule

Email:   dicksok@linnbenton.edu

Instructor website: linnbenton.edu 🡪 Quick Links 🡪 Instructor Websites 🡪 Dickson-Self

**REQUIRED TEXT:** There is no official text. You will be asked to locate and read material relevant to your project via the internet or other sources. Additional text material may be supplied, if needed.

**COURSE DESCRIPTION**

Begins the creation of operating and maintenance routines for a working, fully automated production system. Troubleshoot systems faults and devise a plan for optimizing system operation. Requires substantial research activity and lab time. Job search activities are covered during this course.

**COURSE OUTCOMES**

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

1. Complete Robot Programming exercise, Variable Speed Drive Project, or Computerized Maintenance assignment with minimum score of 70%.
2. Work with team (of 3 or 4) to plan & organize a Mechatronics' Project.
3. Submit Mechatronics' Project plan for approval to instructor.
4. Progress toward Mechatronics' Project completion and submit weekly progress reports to instructor.
5. Present Mechatronics' Project to classmates & Mechatronics' instructors via PowerPoint or other presentation software.

**GRADING**

This class is graded “A” through “F”.  Letter grades will be assigned as follows:

*90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, Below 60% = F*

Final Grade: Determined by the following breakdown:

Project 50%

 Consistent progress toward goal 20%

 Clear and timely documentation 15%

 Demonstration and presentation 15%

Assigned Activities and Quizzes 20%

Attendance and Positive participation 30%

 100%

Assignments, Late Work and Attendance: All assignments and quizzes will be turned-in (hard copy) prior to the start of class. Anything turned in after that will be considered late. Late assignments lose 10% of possible points for every *portion* of a day they are late. **Attendance is IMPORTANT.** You are allowed one “free” absence through the term. If you miss more than one class, it will negatively affect your final grade by **10% per absence**. Being late accounts for ½ of an absence **(5% per late)**. Similar to many workplaces, any student on time for every class meeting will earn a bonus of 5% at the end of the term.

**LBCC EMAIL AND COURSE COMMUNICATIONS**

You are responsible for all communications sent to your LBCC email account. You are required to use your LBCC-provided email account for all email communications at the College. You may access your LBCC student email account through [Student Email](http://linnbenton.edu/lbcc-email).

**DISABILITY AND ACCESS STATEMENT**

Students who may need accommodations due to documented disabilities, who have medical information which the instructor should know, or who need special arrangements in an emergency should speak with their instructor during the first week of class. If you believe you may need accommodations but are not yet registered with the Center for Accessibility Resources (CFAR), please visit the CFAR Website for steps on how to apply for services or call 541-917-4789.

**ACADEMIC HONESTY**
Students are expected to follow [LBCC policies](http://www.linnbenton.edu/faculty-and-staff/administrative-information/policies/board-policies-and-administrative-rules/7000-series-student-services/) regarding academic integrity as articulated in the Students’ Rights Responsibilities and Conduct Policy. Students found to be involved in academic dishonesty will receive an F (failing grade) in this course.

**STATEMENT OF INCLUSION**

To promote academic excellence and learning environments that encourage multiple perspectives and the free exchange of ideas, all courses at LBCC will provide students the opportunity to interact with values, opinions, and/or beliefs different than their own in safe, positive and nurturing learning environments. LBCC is committed to producing culturally literate individuals capable of interacting, collaborating and problem-solving in an ever-changing community and diverse workforce.

**TITLE IX REPORTING POLICY**

If you or another student are the victim of any form of sexual misconduct (including dating/domestic violence, stalking, sexual harassment), or any form of gender discrimination, LBCC can assist you. You can report a violation of our sexual misconduct policy directly to our Title IX Coordinator. You may also report the issue to a faculty member, who is required to notify the Coordinator, or you may make an appointment to speak confidentially to our Advising and Career Center by calling 541-917-4780.

**PUBLIC SAFETY/CAMPUS SECURITY/EMERGENCY RESOURCES**

In an emergency, call 911. Call LBCC Campus Security/Public Safety at 541-926-6855 and 541-917-4440.

From any LBCC phone, you may alternatively dial extension 411 or 4440. LBCC has a public safety app available for free. We encourage people to download it to their cell phones. Public Safety also is the home for LBCC's Lost & Found. They provide escorts for safety when needed. Visit them to learn more.

**CHANGES TO THE SYLLABUS**

I reserve the right to change the contents of this syllabus due to unforeseen circumstances. You will be given notice of relevant changes in class or through LBCC e-mail.

**POSITIVE PARTICIPATION:**

Positive participation includes being on time, demonstrating a self-starting attitude, regular attendance, respecting the rights of others to learn, and contributing to an effective learning situation in the classroom in a safe manner.

**CLASS FORMAT**

This course is designed for learners to study advanced topics in Mechatronics and Industrial Automation. This work is appropriate for students who understand electricity and electronics, PLCs, mechanical systems, motors, planning, technical research, and team dynamics. Unlike many other classes, in this course, you and your classmates will be directing much of your own education, with wide boundaries set by the instructor.

Students will participate in a team project and meet with the instructor on a regular basis to assess progress. Students will also be expected to complete various assigned activities including the demonstration of Mechatronics competencies (hydraulics, pneumatics, electronics, PLCs, motors, etc.). Students are expected to keep a journal or log book of all activities. These logbooks will be assigned by the instructor and kept online, where all team members and the instructor will have full access.

You will be working in teams. Make sure you fulfilling all obligations within the team. Your teammates will be providing feedback on your final grade. Also, make sure that you’re not trying to “do it all.” Work in team environments can be difficult to manage. You must make sure that you’re contributing, while also ensuring that you’re not doing everything. Communicating with team members will help you find a balance.

Finding the right project for this class will be critical. We’ll be meeting for 4 hours per week. That’s 40 hours per 10-week term per person. A 4-person team would need to find a project that would last about 500 hours (40 hours x 4 people x 3 terms). It’s okay to choose shorter projects, but you’ll have to document and present on each project you start, for instance, a 4-person team might do one 200-hour project and one 300-hour project. As in a “real” job, your presence during Capstone is mandatory. If you don’t work, you don’t get “paid” (given a favorable grade). You may NOT work on other classes during your Capstone hours, and the expectation is that you’ll be present for all Capstone class hours, communicating with both the instructor and your teammates, if you won’t be present. Groups often meet outside of class hours, but this is not an acceptable substitute for the class hours you have scheduled to be in class each week. We all have busy lives, and being present for the hours you’ve already committed to is one of the biggest keys to success in this class and a way to respect your teammates. No penalty is given to any team for not meeting during days when school is closed (either scheduled or unscheduled).

You’ll have a formal check-in with the instructor as a team in weeks 3, 6 and 8. These meetings will be during your scheduled class time and will last about 30 minutes. In these check-ins, you’ll discuss current progress, show your documentation, and discuss your path forward for the next few weeks. In week 10, you’ll present to the class your project, current progress (including paths researched and not taken), and path forward for your project. These will be a formal presentation and last 10-20 minutes per group.

Likewise, your grade isn’t based on your project being wildly successful. Obviously, we want your project to be a success, but this class isn’t pass/fail based on results. We’ll celebrate the learning process, win or lose. If you started a project and ran into numerous problems during implementation, the expectation is that you’re able to troubleshoot, research, and overcome these problems as they arise. If you continued to work toward the goal, but were unable to complete the project, that’s okay. Your final presentation will be about the challenges you encountered and how you overcame them. That said, there are several projects in the area that were started, but not finished, if you wish to use these for your project.