Syllabus

MECH-1010 *Fundamentals of Mechatronics*

Instructor Contact Information

Dr. J. Kirk Storey

Canvas Inbox

Course Description

Covers the fundamental skills and theory of the Mechatronics discipline. Covers integrated system design which includes electrical, mechanical, and microprocessor programming theory. Discusses the fundamentals of materials science, manufacturing processes, and the application of automation systems in a production environment.

This course is required for both the Associates degree and Bachelors degree in Mechatronics Engineering. This course provides the framework and fundamentals for being successful throughout the Mechatronics program.

Course Outcomes

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

- Describe career paths in automation
- Describe factory automation systems
- Describe a production environment
- Identify safety standards in a production environment
- Identify electrical, mechanical, and control components of a system

Prerequisites and Needed Skills

Course Prerequisites:

Positive attitude and willingness to learn

Technology Expectations:

This course is offered completely online. As such it is the students responsibility to have equipment and internet to be able to access all the course material on canvas. Note - Apple products are known for not showing images in canvas. It will be a requirement for you to be able to see images and interpret them on assignments, quizzes and exams.

Materials, Fees and Technology Tools

Required materials, fees and technology

- Textbook: Industrial Maintenance and Mechatronics, 2ed edition, by Shawn A Ballee, Gary R. Shearer, Goodharrt-Wilcox publishing 978-1-63776-711-5
  - textbook is available from the publisher or affiliate or online
  - note that the course was developed with the 1st edition, this would also be acceptable (and maybe cheaper)
  - note that the course may still guide to 1st edition locations in the text, that don't exactly line up with the new edition. We have caught a lot of these, and appreciate indication of places that have note yet be resolved.
- Access to a computer and reliable internet connection

Optional materials, fees and technology

- Course fee of $20 for materials applies.
- Lab access fee of $45 applies.

How This Course Works

Course Mode / Attendance: ONLINE

This is a fully online course. Online learning offers the convenience of continuing your education regardless of your access to the physical classroom. Be aware that online courses at UVU have regular due dates and must be completed within the term you are registered. You are expected to attend class online each week and participate in all activities. Absence from our online class makes it extremely difficult to be a successful student.

Description of how course works:

For this **three (3) credit-hour** course students should expect to spend up to **9 (+/-) hours a week** for a full semester and **18 (+/-)** for a BLOCK class completing course activities.

Canvas is where content, grades, and communications will reside for this course. All assignments will be submitted electronically through Canvas. A new week begins on Monday and weekly due dates are on **Saturdays** unless otherwise specified in the assignment. There are no extra credit opportunities in this course--rather respond seriously to the offered assignments.

As a student you can expect this course to challenge and engage you as a learner. You will be expected to read and interpret technical figures and diagrams, watch videos, and apply the information gained in discussions, homework and exams. You will also be expected to create infographics and presentations over the course material. Furthermore, you will be required to follow the course schedule and get assignments completed on time.

This course is divided into 5 modules:

1. What is Mechatronics? (1 week)
2. Electrical Systems (4 weeks)
3. Mechanical Systems (4 weeks)
4. Computer and Control Systems (4 weeks)
5. Bringing it all together (2 weeks)

The culminating assignment for the introductory module is an infographic and presentation which you will build on (add to) over the semester resulting in your final project and presentation in the last module. There will be discussions, homework, projects, and major exams in each of the other modules.

Inclusion Statement

My intent for this class is to create a space where students feel included, heard, and respected, and that students diverse identities and backgrounds are valued and viewed as an asset to our shared learning community. We all come to this course with unique life experiences, and there will be diversity of perspectives in our discussions. This diversity is our strength as we strive to communicate and connect across difference, and build an inclusive and equitable learning environment.

Do your own Work

Cheating in this course will result in a report to the Dean, failing grade for the course, and recommendation to be removed from UVU. Don't risk it!

Student Responsibilities:

- Know the rules of the class as outlined in this syllabus and the course orientation materials THEN ask questions
- Start class the first week of the term AND participate each week

- Complete all readings and assignments by the due date
- Check course announcements with each login
- Learn how to use Canvas including communication tools (e.g. discussion, Canvas inbox, etc.). If you have technology-related problems contact the **Service Desk (https://www.uvu.edu/servicedesk/)** .
- Abide by ethical standards. Your work must be your own.
- Contact your instructor as early as possible if an emergency arises. Do NOT wait until the last minute to ask for an extension.

Instructor Responsibilities:

- Respond to emails within ONE business day. If multiple emails are received regarding the same question or concern, they may be responded to with an announcement to the entire class.
- Provide timely, meaningful and constructive feedback on assignments.
- Facilitate an effective learning experience.
- Refer students to appropriate services for issues that are non-course content specific. For instance, technical issue, writing labs, accessibility services, etc.
- Mentor students through the course.

Grading and Late Work Statement

Grading Scale:

The following grading standards will be used in this class: (percent of total):

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
94	90	87	84	80	77	74	70	67	64	60

Assignment Categories

Activity	Percentage
Assignments	5
Discussions	5
Homework	30
Projects/Presentations	30
Exams	30
Total	100

Late Work Statement:

The best way to be successful in this course is to submit all assignments by their due date. Late work is not accepted and a zero will be given.

In the event that you will not be able to meet a due date, contact your instructor as soon as possible. Contacting the instructor after the due date asking for an extension is not acceptable.

Assignment and Assessment Descriptions

Assignments:

- Syllabus Quiz: One of your first assignments is to complete the syllabus quiz. It is important that you familiarize yourself with the syllabus (this document) and all of the information in the Course Orientation module. This quiz is multiple/choice, true/false and must be taken as many times as

necessary to receive a perfect score which releases the full course materials. This will ensure that course expectations are clear.

- Projects will be iterative assignments where you create and add to a particular system infographic. Infographics are a visual image such as an image, chart, or diagram used to represent information or data. If you are unfamiliar with infographics, google "mechatronic infographics" (include the quotes) and filter to images to see some examples and click **Infographic Example (https://uvu.instructure.com/courses/576165/pages/infographic-example)**. These assignments will help you better understand the systems we will cover and create the foundation you need to continue in this major.

Discussions:

- Students Helping Students discussions are opportunities to reach out to other students for each module. These are optional and can prove to be very helpful if you take them seriously.
- Project progress discussions will provide opportunities to post a short summary of your progress during a particular week to share ideas you are applying to your project for the benefit of other students. Responses are not required.
  - Due dates will conclude by **Saturday**. After this, posts will be marked late and given a zero.

Assessments:

- Homework (Quizzes) are due weekly, are not timed, and allow two (2) attempts.
- Exams are limited to 60 minutes and consist of 40 multiple choice, true/false, and matching type questions. (sorry, only 1 attempt on exams)
  - Exams are completed online anytime during the typical 3-day testing period. They are open resource AND must be completed individually.
- Final Project is a systems level infographic you develop based on a provided Senior Mechatronics System Capstone Project created by our own UVU seniors.

Course Schedule

See our **Course Schedule (https://uvu.instructure.com/courses/576165/pages/course-schedule)**

UVU Policies and Resources

Policies and Procedures (https://www.uvu.edu/otl/students/policiesandprocedures.html)

Student Success Resources (https://www.uvu.edu/otl/students/index.html)

Accessibility Services (https://www.uvu.edu/accessibility-services/)

- Most images of figures and diagrams within this course, are not fully accessible to students using screen readers or other assistive devices. Please contact the Office of Accessibility Services (OAS) and your instructor if this is an issue. OAS (801) 863-8747 or **accessibilityservices@uvu.edu (mailto:accessibilityservices@uvu.edu)**
- Students who need accommodations because of a disability may contact the UVU Office of Accessibility Services (OAS), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the OAS office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677.

Campus Resources (https://www.uvu.edu/otl/students/campus_resources.html)

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Technology Support Services

For 24/7 technical support contact **Instructure's Canvas Support Live Chat (https://cases.canvaslms.com/liveagentchat?chattype=student&sfid=001A00000085cNxIAI)**

(385) 204-4930 (Available 24/7)

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