



Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

Semester: Fall

Course Prefix: AET 1285 801

Course Title: Electric Motor Control Lab

Year: 2025

Course and Section #: AET 1285 801

Credits: 4

Course Description

Covers the proper use of tools and test equipment needed to maintain motors and their controllers. Emphasizes the use of schematics, line diagrams, ladder logic, and wiring diagrams. Covers DC/AC, single phase, and three phase motors. Integrates logic design, motor protection, and wiring of motor control centers. Includes the workings of single phase and three phase transformers including delta and wye configurations

Course Attributes

This course has the following attributes:

- ☐ General Education Requirements
- ☐ Global/Intercultural Graduation Requirements
- ☐ Writing Enriched Graduation Requirements
- ☒ Discipline Core Requirements in Program
- ☐ Elective Core Requirements in Program
- ☐ Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Tim Hakala

Student Learning Outcomes

1. Connect internal DC and AC motor windings appropriately.
 2. Wire DC and AC motors and their controls to go forward and reverse.
 3. Design operationally correct schematic, logic, and ladder control diagrams.
 4. Utilize sensing devices, timers, relays, solenoids, and starters to create an operational electrical system.
 5. Troubleshoot electrical control devices, motors, and industrial control circuitry.
 6. Wire single phase and three phase transformers in wye and delta configurations.
 7. Integrate a motor control center including power, controls, and protective devices.
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Course Materials and Texts

Clip leads
Safety Gloves
Safety Glasses

Course Requirements

Course Assignments, Assessments, and Grading Policy

- Lab in class: Lab packets and sign off sheets (40% of overall grade)
- Attendance: Attendance is very important, all packet work is done in the Lab class (30% of overall grade)
- Final Exam: A comprehensive exam that covers all course topics. (30% of overall grade)

A = 95-100	B - = 80-82	D+ = 67-69
A- = 90-94	C+ = 77-79	D = 63-66
B+ = 87-89	C = 73-76	D- = 60-62
B = 83-86	C - = 71-72	F = 0-59

Required or Recommended Reading Assignments

All required readings and Lab Packets that align with the Lab Packets listed below.

General Description of the Subject Matter of Each Lecture or Discussion

Transformer Packet:

Learning all about Transformers both single phase and 3-phase,

Conduit Bending Packet and Test:

Learn to bend off sets, 3 and 4 point saddles

Lab packet 1 of 4

Lab Volt Transformer projects, DC Motors, Coil testing, Fuse testing, Generators, Megger training.
Then build a motor

Lab packet 2 of 4

Conduit Bending formulas and bending projects. DC motor controller projects.

Lab packet 3 of 4

AC Motors and controllers, Lab Volt projects, Safety on all labs and projects

Lab packet 4 of 4

Motor Control, ladder diagrams and motor starters. Industrial motor control motors, Ladder safety, Solid State 3- phase motor starters, Motor control centers. Beginning PLC programming, Introduction to frequency drives.

Required Course Syllabus Statements

Generative AI

Potential employers will eventually expect employees to know how to use tools like ChatGPT to generate content, code, and data. You should learn how to use artificial intelligence (AI) and in what instances AI can be helpful to you. Remember, AI programs are not a replacement for your human creativity, originality, and critical thinking. Writing, thinking, and researching are crafts you must develop over time to develop your own voice.

The use of generative AI tools (e.g., ChatGPT, Google Bard, etc.) is permitted in courses for the following activities:

- Brainstorming and refining your ideas.
- Fine-tuning your research questions; don't accept anything AI generates at face value without checking it critically.
- Finding *accurate* information on your topic.
- Drafting an outline to organize your thoughts.
- Checking grammar and style.

The use of generative AI tools is **not** permitted in this course for the following activities:

- Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts/responses assigned to you or content that you put into a Teams/Canvas chat.
- Completing group work that your group has assigned to you unless it is mutually agreed upon that you may utilize the tool.
- Writing entire sentences, paragraphs, or papers to complete class assignments.

You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws or contains misinformation or unethical content). Your use of AI tools must be [appropriately documented](#) and cited to stay within university policies on academic honesty.

Any student work submitted using AI tools should clearly indicate what work is the student's work and what part is generated by the AI. In such cases, no more than 25% of the student work should be generated by AI. If any part of this is confusing or uncertain, please get in touch with the course instructor for a conversation before submitting your work. Additional university resources regarding the use of AI are available through the [UVU Office of Teaching and Learning](#).

Using Remote Testing Software

☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility

Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of

the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.