



Master Course Syllabus

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

Semester: Spring

Course Prefix: AUT

Course Title: Engine Electrical Systems

Year: 2025

Course and Section #: 1170-001

Credits: 2

Course Description

Discusses batteries, starting systems, and charging systems and their basic functions and how to diagnose faults in these systems. Explores basic electrical system diagnostics, basic computer functions in electrical systems and the use of oscilloscopes for basic diagnostics. The course will explore pulse width modulation and the testing of relays in electrical circuits. Introduce electric and hybrid battery safety procedures. Uniquely designed for students across different programs including automotive, powersports, collision repair, diesel technology, and aviation.

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: Jared Graham

Student Learning Outcomes

Upon successful completion, students should be able to . . .

1. Apply diagnostic procedures to electrical circuits
 2. Test and evaluate batteries, starting systems and charging systems
 3. Use electrical testing tools for system diagnostics
 4. Review and interpret wiring diagrams for electrical system diagnostics
 5. Diagnose and test multi-pin relays
 6. Identify computer function sin electrical circuits
 7. Exhibit electric and hybrid vehicle battery safety procedures
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Course Materials and Texts

“Automotive Electricity and Electronics” 6th edition, by James Halderman

Course Requirements

Course Assignments, Assessments, and Grading Policy

You will have Chapter Readings and Quizzes, Class Quizzes and Assignments, Research, and Exams.

Chapter Readings and Quizzes

The schedule lists the chapters that will be explored in the class. You should read the chapter prior to the class so that our time can be put to best use discussing the systems described in the chapter. Chapter quizzes will be administered electronically through Canvas.

Class Quizzes and Assignments

Daily quizzes may be given on the assigned readings and/or the material covered in the homework assignments or presented in class. Quizzes given in class cannot be made up.

There will also be assignments and class discussions posted to canvas with their respective instructions and due dates. These will be part of your class quizzes and assignments grade.

Research

You will complete a research presentation on something of interest to you related to Engine Electrical. You will present your research in class. Further details can be found on Canvas under the Research Project.

Exams

There will be two exams given in this class. A midterm exam as well as a comprehensive final exam. Both exams will be given in class.

Grading

Chapter Quizzes = 10% Class quizzes and Assignments = 20% Attendance = 15%
Research = 25% Exams = 30%

Letter Grade	Percentage
A	94%+
A-	<94-90%
B+	<90-87%
B	<87-84%
B-	<84-80%
C+	<80-77%
C	<77-74%
C-	<74-70%
D+	<70-67%
D	<67-64%
D-	<64-61%
E	Less than 61%

Late Work / Make-up Work

Make up work will be allowed only for extenuating circumstances as per instructor discretion.

Assignments missed because of unexcused absences cannot be made up. Course work is due on the dates listed on canvas for the respective work. **Late work will receive a penalty of -10% a day for each day late. After 6 days, late work will be worth a maximum of 40% of its original points.**

Assignments will close for any submissions the morning of the final unless otherwise specified. If your overall grade is less than 61% at the end of the course, you will be required to retake the course.

All assignments and quiz due dates will be posted on Canvas, assignments will typically close on Sundays at 11:59pm.

Attendance

Attendance counts as 15% of your grade. Students are expected to be in class, on time, every day. Being late for class will cost 1/3 of daily attendance. 3 lates add up to an absence. Missing more than half of class is an absence. Excused absences must be approved 2 days prior to the absence. Emergencies will be considered case by case at the discretion of the instructor. Send me a message on canvas if you cannot make it to class on time. **If you receive 4 or more absences, you may be required to retake the class.**

Required or Recommended Reading Assignments

It is recommended to read the chapter that corresponds with that day's lecture before class.

General Description of the Subject Matter of Each Lecture or Discussion

Day 1: Introduction and Batteries

Day 2: Batteries

Day 3: Magnetism

Day 4: Starters

Day 5: Cranking System

Day 6: AC Motors

Day 7: Midterm

Day 8: Alternators

Day 9: Charging System

Day 10: Waveforms

Day 11: Scopes

Day 12: Ignition

Day 13: Review

Day 14: Final

Required Course Syllabus Statements

Generative AI

AI programs are not a replacement for your human creativity, originality, and critical thinking. Writing, thinking, and researching are crafts that you must develop over time to develop your own individual voice.

The use of generative AI tools (e.g. ChatGPT, Google Bard, etc.) is permitted in this course for the following activities: Brainstorming and refining your ideas; Fine tuning your research questions; Finding information on your topic; Drafting an outline to organize your thoughts; and 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; Writing a draft of a writing assignment; 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 contain misinformation or unethical content). Your use of AI tools must be properly documented and cited in order 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 10% of the student work should be generated by AI. If any part of this is confusing or uncertain, please reach out to me for a conversation before submitting your work.

Copied and modified from (Hilary Hungerford | Office of Teaching and Learning | Utah Valley University)

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.