



## AUT1120-001 Course Syllabus

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

Semester: Fall

Year: 2025

Course Prefix: AUT

Course and Section #: 1120-001

Course Title: Powertrain Systems

Credits: 2

### Course Description

Explores operation, repair, diagnosis and adjustment of manual and automatic transmissions and transaxles, and associated drivetrain including: helical & planetary gearing, hydraulic theory, and strategies for operation. Analyzes transmission controls for shifting and diagnosis. Includes removal, disassembly, reassembly, and installation. Incorporates use of applicable diagnostic and test equipment.

### 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: Rich Lamb

### Student Learning Outcomes

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

1. Accomplish routine transmission and differential service.
2. Diagram power flow through manual & automatic transmission gearing.
3. Understand operation & testing of automatic transmission clutches and bands.
4. Diagram the hydraulic flow of the pump, valve body, control and apply devices,

and coolers.

5. Understand measurement, inspection, and testing of manual & automatic transmissions and components for proper operation.
6. Understand the function and diagnosis of the torque converter and TCC.
7. Understand research methods for keeping current with transmission manufacturers changes and future trends of the automotive transmission industry.

## Course Materials and Texts

Manual Drivetrains and Axles 9th Edition James D. Halderman, Pearson Publishing. ISBN 13: 978-0-13-783999-5

Automatic Transmissions & Transaxles, 8<sup>th</sup> edition, James D. Halderman, Pearson Publishing. ISBN 13: 978-0-13-783987-2

## Course Requirements

### Course Assignments, Assessments, and Grading Policy

Assignments include textbook chapters to read with chapter quiz questions, homework, weekly reflections, in-class quizzes and handouts, a research presentation, and exams.

#### 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.

You will be required to write short weekly thoughts during the semester as you reflect on what you have learned so far during the course. These will be due each week and all are to be completed before the end of the course. Please write a minimum three-sentence paragraph each week and write your thoughts and feelings about what you have learned in the course lecture that week. You should also include what you hope to learn during the remainder of the course. In your own words & voice please. I am not interested in what AI or ChatGPT thinks nor will I award them points. Thank you. These are each worth 20 points. Please submit them to (or write them on) Canvas.

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 Presentation

You will complete a research presentation on something of interest to you related to transmissions. You will present your research in class. Choose a transmission or drivetrain topic that interests you or that is equipped on the vehicle you drive. Research

that transmission and prepare a detailed description of your findings to the class. Include the following items in your description:

1. Vehicles equipped with this transmission, service procedures & intervals, fluid type & quantity.
2. Power flow & component application charts.
3. Hydraulic flow including solenoid type and shift logic.
4. Visual aids of the:

1) Power Flow

2) Hydraulics

3) Exploded view or diagram

6. The cost of rebuilding and/or replacement—parts & labor.

Outside research for this assignment will be mandatory. Pictures and up-to-date information from manufacturers and/or the service industry are required. The research on your selected transmission must be completed by the third week of class. During the following weeks of class, you will present your findings. These presentations should last between seven and ten minutes in length. **As part of the assignment, you are required to provide 3 multiple-choice questions, including the correct answer to me and the class.** These may be used on your final exam!!

### Exams

Exams will be given periodically in class to help gauge your progress. A comprehensive final exam will be given in class on the last day of the block.

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

### Required or Recommended Reading Assignments

#### 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. The associated chapter quizzes will be administered electronically through Canvas.

### General Description of the Subject Matter of Each Lecture or Discussion

<b>Week - Day: Date</b>	<b>Topic</b>
Week 1 – Day 1: Aug 20	Introductions, Syllabus, Drivetrains: Manual drivetrain & axles Ch. 1, 2, 5
Week 2 – Day 2: Aug 25	Manual transmission operation & diagnosis: Manual drivetrain & axles Ch. 8
Week 2 – Day 3: Aug 27	Clutch operation & diagnosis: Manual drivetrain & axles Ch. 3, 4
	<b>Labor Day</b>
Week 3 – Day 4: Sep 3	Axle & differentials: Manual drivetrain & axles Ch. 12, 13
Week 3 – Day 5 Sep 8	Automatic transmission fluid & power flow: Automatic transmissions & transaxles Ch. 3, 7
Week 4 – Day 6: Sep 10	Powerflow continued
Week 4 – Day 7: Sep 15	Clutches & bands: Automatic transmissions & transaxles Ch. 8
Week 5 – Day 8: Sep 17	Hydraulic system, control valves & solenoids: Automatic transmissions & transaxles Ch. 4, 5
Week 5 – Day 9: Sep 22	Torque converters: Automatic transmissions & transaxles Ch. 6
Week 6 – Day 10: Sep 24	Drivetrain electricity & electronics: Automatic transmissions & transaxles Ch. 9

Week 6 – Day 11: Sep 29	Powertrain review
Week 7 – Day 12: Oct 1	Hydraulics review
Week 7 – Day 13: Oct 6	Final review
Week 8 – Day 14: Oct 8	<b>Final</b>

## 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.

### 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](mailto:accessibilityservices@uvu.edu) at [accessibilityservices@uvu.edu](mailto: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](mailto: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](#).

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### 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](mailto: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](mailto: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. 4 | Page