



Course Outline

2026-2027 Catalog

AUT 57 - Manual Transmissions/Drivetrains Lab

Catalog Description

Transfer Status: CSU

Prerequisite: AUT 3 (or concurrent enrollment)

Corequisite: AUT 56

Unit(s): 2.00

Lab: 102.00 Contact hours/0.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

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Course Description: This course provides theory and principles of operation in manual transmissions and transaxles, front and rear axles, drive lines and transfer cases. Shop practice includes diagnostics, testing, and repairing of each system.

Objectives

Upon successful completion of this course, the student should be able to:

1. Identify the different types of manual transmissions and transaxles found in today's cars and light trucks.
2. Tear down, inspect and reassemble a manual transmission/transaxle.
3. Describe power-flow through each gear of a manual transmission/transaxle.
4. Diagnose and repair manual transmission/transaxle shift and noise concerns.
5. Identify the different types of front and rear differential designs found in today's cars and trucks.
6. Tear down, inspect and reassemble a differential assembly.
7. Identify the different types of transfer cases and electronic differentials found in today's cars and trucks.
8. Tear down, inspect and reassemble a four wheel drive transfer case.
9. Describe power-flow through a differential assembly.
10. Describe power-flow through a transfer case.
11. Diagnose and repair differential related concerns.
12. Diagnose and repair transfer case related concerns.

Course Content

Topic Titles / Suggested Time Topic	
	<u>Lab</u>
<u>Topics</u>	<u>Lab Hrs</u>
Manual transmission/transaxle identification.	3.00
Manual transmission/transaxle tear down and component identification.	9.50
Manual transmission/transaxle powerflow.	6.00
Manual transmission/transaxle synchronizer and shifter operation.	6.00
Manual transmission/transaxle lubrication systems.	3.00
Manual transmission/transaxle reassembly.	9.50
Clutch system component identification and inspection.	3.00
Clutch assembly removal and replacement.	6.00
Setting differential pinion gear depth.	7.00
Setting differential ring gear back lash.	9.50
Setting differential pinion gear bearing preload.	3.00
Transfer case identification and disassembly.	6.00
Transfer case power-flow.	9.50
Transfer case component inspection and assembly.	9.50
Electronic transfer case diagnosis and repair.	11.50
Total Hours: 102.00	

Methods of Instruction

- A. Class Activities
- B. Collaborative Group Work
- C. Demonstrations
- D. Discussion
- E. Field Trips

- F. Instructor Demonstrations
- G. Laboratory Experiments
- H. Problem-Solving Sessions

Methods of Evaluation

- A. Exams/Tests
- B. Demonstration
- C. Lab Projects
- D. Final Examination
- E. Performance Examinations
- F. Practical Evaluations

Examples of Assignments**Reading Assignments**

1. Using Mitchell or All Data, look up and interpret the service procedure for the transmission you are working on in lab.
2. Read the chapter regarding power-flow then show power-flow through the assigned transmission.

Writing Assignments

1. Prior to replacing the clutch, fill out a repair order adhering to B.A.R. guide lines then write a story on the back making sure it contains the "3 C's".
2. In your work book, provide a detailed description of the process for bleeding the clutch after master cylinder replacement.

Out-of-Class Assignments

1. Not applicable.
2. Not applicable

Recommended Materials of Instruction

Jack Erjavec. (2015). Today's Technician: Automatic Transmissions and Transaxles Set. *Cengage Learning, 6th.*

Other Learning Materials

Closed toe leather work shoes with slip resistant soles

Minimum Qualifications

Automotive Technology

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