



Course Outline

2026-2027 Catalog

AUT 57 - Manual Transmissions/Drivetrains Lab

Catalog Description

Transfer Status: CSU

Prerequisite: AUT 3 (or concurrent enrollment)

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, a transfer case, and a differential assembly.
3. Diagnose and repair manual transmission/transaxle, transfer case, and differential concerns.
4. Identify the different types of front and rear differential designs found in today's cars and trucks.
5. Describe power-flow through each gear of a manual transmission, transfer cases, and a differential assembly.
6. Identify the different types of transfer cases and electronic differentials found in today's cars and trucks.

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. Special Studies/Problems
- B. Class Activities
- C. Instructor Demonstrations
- D. Laboratory Experiments
- E. Problem-Solving Sessions

Methods of Evaluation

- A. Exams/Tests
- B. Demonstration
- C. Class participation
- D. Lab Projects
- E. Final Examination

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. Be prepared to discuss with your instructor.
2. Read the chapter regarding power-flow then show power-flow through the assigned transmission. Be prepared to discuss in lab.

Writing Assignments

1. Prior to replacing the clutch, fill out a legal repair order adhering to B.A.R. guidelines 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. Be prepared to discuss with your instructor.

Recommended Materials of Instruction

Erjavec, J., et al. (2026). Today's Technician: Manual Transmissions and Transaxles Classroom Manual and Shop Manual. *Cengage, 8th*. 9780357935286.

Minimum Qualifications

Automotive Technology

Created/Revised by: Kielb, Craig

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