

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

AUT 57 - Manual Transmissions/Drivetrains Lab

2 Unit(s)

Prerequisite(s): AUT 41 (or concurrent enrollment)

Co-requisite(s): AUT 56

Recommended Prep: AUT 1

Transfer Status: CSU

105 hours Lab

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.

II. OBJECTIVES

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

- A. Identify the different types of manual transmissions and transaxles found in today's cars and light trucks.
- B. Tear down, inspect and reassemble a manual transmission/transaxle.
- C. Describe power-flow through each gear of a manual transmission/transaxle.
- D. Diagnose and repair manual transmission/transaxle shift and noise concerns.
- E. Identify the different types of front and rear differential designs found in today's cars and trucks.
- F. Tear down, inspect and reassemble a differential assembly.
- G. Describe power-flow through a differential assembly.
- H. Diagnose and repair differential related concerns.
- I. Identify the different types of transfer cases and electronic differentials found in today's cars and trucks.
- J. Tear down, inspect and reassemble a four wheel drive transfer case.
- K. Describe power-flow through a transfer case.
- L. Diagnose and repair transfer case related concerns.

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

Lab	
<u>Topics</u>	<u>Hours</u>
1. Manual transmission/transaxle identification.	3.00
2. Manual transmission/transaxle tear down and component identification.	10.00
3. Manual transmission/transaxle powerflow.	6.00
4. Manual transmission/transaxle synchronizer and shifter operation.	6.00
5. Manual transmission/transaxle lubrication systems.	3.00
6. Manual transmission/transaxle reassembly.	10.00
7. Clutch system component identification and inspection.	3.00
8. Clutch assembly removal and replacement.	6.00
9. Setting differential pinion gear depth.	7.00
10. Setting differential ring gear back lash.	10.00
11. Setting differential pinion gear bearing preload.	3.00

12. Transfer case identification and disassembly.	6.00
13. Transfer case power-flow.	10.00
14. transfer case component inspection and assembly.	10.00
15. Electronic transfer case diagnosis and repair.	12.00
Total Hours	105.00

IV. METHODS OF INSTRUCTION

- A. Instructor Demonstrations
- B. Collaborative Group Work
- C. Class Activities
- D. Field Trips
- E. Discussion
- F. Demonstrations
- G. Problem-Solving Sessions
- H. Laboratory Experiments

V. METHODS OF EVALUATION

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

VI. EXAMPLES OF ASSIGNMENTS

- A. Reading Assignments
 - 1. Read the chapter regarding power-flow then show power-flow through the assigned transmission.
 - 2. Using Mitchell or All Data, look up and interpret the service procedure for the transmission you are working on in lab.
- B. Writing Assignments
 - 1. In your work book, provide a detailed description of the process for bleeding the clutch after master cylinder replacement.
 - 2. 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".
- C. Out-of-Class Assignments
 - 1. Not applicable.

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Textbooks:

- A. Jack Erjavec. Today's Technician: Automatic Transmissions and Transaxles Set. 6th Edition. Cengage Learning, 2015.

Materials Other Than Textbooks:

- A. Closed toe leather work shoes with slip resistant soles