

# Lassen Community College Course Outline

## AT-68 Automatic Transmissions

3.0 Units

### I. Catalog Description

This course is designed to provide the student with theory and operation of common automatic transmissions including diagnosis, adjustment and repair of common automatic transmission problems. This course conforms to ASE Education Foundation standards for automatic transmissions. This course has been approved for Hybrid delivery.

**Recommended Preparation:** Successful completion of ENGL105 or equivalent multiple measures placement.

17 Hours Lecture, 102 Hours Lab, 34 outside-of-class hours, 153 total student learning hours  
Scheduled: Spring odd

### II. Coding Information

Repeatability: Not Repeatable. Take 1 Time  
Grading Option: Graded or Pass/No Pass  
Credit Type: Credit - Degree Applicable  
TOP Code: 094800

### III. Course Objectives

#### A. Course Student Learning Outcomes

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

1. Demonstrate the ability to perform diagnostic tests and service procedures on common automatic transmissions and transaxles at a beginner level
2. Diagnose, analyze, and correct malfunctions of unit components in automatic transmissions at a beginner level-
3. Demonstrate and proper use of specialized tools when working on automatic transmissions at a beginner level.

### IV. Course Content

#### A. Safety and shop procedures

1. Shop safety and routines
2. Vehicle identifying information, customer concern, related service history, cause, and correction.
3. Identify and interpret automatic transmission concern; determine necessary action.

#### B. Automatic transmission service

1. Transmission/transaxle identification
2. TSB and service precautions
3. Fluids types, level and condition checks
4. Filter replacement and inspection
5. Flushing procedures

#### C. Symptom diagnosis

1. Identify and interpret transmission concern
2. Test drive
3. Pressure testing
4. Stall test

5. Converter lock-up systems testing
  6. Diagnose transmission gear reduction/multiplication concerns using power flow principles
- D. In-vehicle transmission/transaxle maintenance and repair**
1. Diagnose electronic transmission control systems using a scan tool
  2. Inspect, test, adjust, repair or replace electrical components and circuits
  3. Inspect and replace external seals and gaskets
  4. Inspect, replace, and align transmission mounts
- E. Removal and replacement**
1. Safety
  2. Engine support
  3. Torque converter installation
- F. Theory of operation**
1. Torque converter
  2. Gear ratios-under drive; direct drive; over drive
  3. Hydraulic system
  4. Clutch packs
  5. Sprags and one-way clutches
  6. Bands
  7. Planetary gear sets
  8. Continuously variable transmission (CVT) theory
- G. Overhaul procedures**
1. Disassembly
  2. Hard part inspection
  3. Clutch pack overhaul
  4. Sprag and one-way clutch replacement
  5. Seal and bushing replacement
  6. Valve body repair
  7. Torque converter inspection
  8. Reassembly and clearance measurements
  9. Air test operation of clutch and servo assemblies

## **V. Assignments**

### **A. Appropriate Readings**

1. Industry materials as furnished by the instructor
2. Current professional manuals

### **B. Writing Assignments**

Typical writing assignments will include:

1. Providing written answers to assigned questions
2. Performing mathematical calculations as assigned
3. Maintaining a notebook of class assignments/activities
4. Maintain a record of completed assignments/activities

### **C. Expected Outside Assignments**

Appropriate outside assignments may include:

1. Researching appropriate readings
2. Preparing written assignments
3. Studying as needed for successful classroom performance

#### **D. Specific Assignments that Demonstrate Critical Thinking**

Students will perform analysis and evaluation of readings and/or classroom materials and utilize this analysis in classroom discussion, writing assignments, and in performing laboratory activities. Students must select and use appropriate methods and material needed to complete laboratory assignments.

### **VI. Methods of Evaluation**

Term paper (topic choice, thesis statement, outline, bibliography, rough draft, final draft), homework, classroom discussion, essay, journals, lab demonstrations and activities, multiple choice quizzes, and participation.

#### **Hybrid Evaluation**

All quizzes and exams will be administered during the in person class time. Students will be expected to complete online assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous (chat/forum) will be evaluated for participation and to maintain effective communication between instructor and students.

### **VII. Methods of Delivery**

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

Traditional Classroom Delivery  Correspondence Delivery

Hybrid Delivery  Online Delivery

#### **Traditional Classroom Delivery:**

The appropriate method of instruction will be determined by the instructor and may include:

1. Lecture with or without various audio/visual aids.
2. Group problem solving, discussion, debate, and/or critique.
3. Demonstration
4. Computer-assisted/other self-paced instruction.
5. Field trips or field assignments.
6. Laboratory assignments utilizing planned activities or 'live' work.

#### **Hybrid Delivery:**

Hybrid modality may involve face to face instruction mixed with online instruction. A minimum of 1/3 of instruction, including 100% labs, will be provided face to face. The remaining hours will be taught online through a technology platform as adopted by the district.

### **VIII. Representative Texts and Supplies**

Santini and VanGelder; *Master Automotive Technician Series Automotive Automatic Transmission and Transaxles*, 2017, ISBN 9781284122039

Service Manuals as determined by the instructor. Appropriate shop clothing, proper footwear, and safety glasses

### **IX. Discipline/s Assignment**

Automotive Technology

**X. Course Status**

Current Status: Active

Original Approval Date: 02/05/2013

Board Approved: 03/12/2013

Chancellors' Approval: 05/01/2013

Revised By: Chad Lewis

Curriculum/Academic Standards Committee Revision Date: 02/15/2022