

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: AUT 251

Credits: 4

Course Title: Automatic Transmissions

Course Description: Studies several types of automatic transmissions/transaxles, torque converters, and their principles of operation. Includes adjustment, maintenance, and rebuilding. Prerequisites: Completion of AUT 101 - Introduction to Automotive Systems and AUT 241 - Electricity I is preferred. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose: To examine theory and functioning of automotive automatic transmissions/transaxles and perform diagnosis and repair of automatic transmissions/transaxles. Safety will be emphasized.

Course Prerequisites and Co-requisites:

Prerequisites: Completion of AUT 101 - Introduction to Automotive Systems and AUT 241 - Electricity I is preferred.

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Explain the basic design and operation of standard and lockup torque converters;
- b. Describe the construction and operation of planetary gears, Simpson gear train, Ravignaux gear train, planetary gear sets in tandem, and Lepelletier systems;
- c. Explain the operation of, and perform service on, automatic transmissions/transaxles;
- d. Identify and perform various pressures testing in transmission/transaxles;
- e. Describe what determines shift characteristics;
- f. Identify the input and output devices in a typical electronic control system and briefly describe the function of each;
- g. Diagnose hydraulic and vacuum controls systems; and
- h. Describe the basic steps for overhauling a transmission/transaxle.

Major Topics to Be Included:

- a. Torque Converters
- b. Continuously Variable Transmissions (CVT)
- c. Planetary Gears
- d. Transmission Clutches
- e. Final Drives and Differentials
- f. Hydraulic Controls
- g. Electronic Controlled Automatic Transmissions/Transaxles
- h. Automatic Transmission/Transaxle Overhaul
- i. Automatic Transmission/Transaxle Diagnosis

Effective Date of Course Content Summary: March 29, 2018