

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: AUT 141 **Credits:** 3

Course Title: Auto Power Trains I

Course Description:

Presents operation, design, construction and repair of power train components, standard and automatic transmission. Includes clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters as well as 2, 3, and 4 speed standard, overdrive and automatic transmissions. Part I of II. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

General Course Purpose:

This course provides instruction on the construction, operation, inspection, maintenance, service, repair and diagnosis of a modern automatic transmission-equipped vehicle. Initial instruction will focus on repair and replacement techniques with additional focus on the diagnosis of hydraulic, electric and control systems for automatic transmissions.

Course Prerequisites and Co-requisites:

Prerequisite: AUT 197

Student Learning Outcomes:

Upon completing the course, the student will be able to

- Service, diagnosis, and repair of automatic transmission sub-systems.
- Develop and apply diagnostic strategies for various types of automatic transmissions, including electrical and hydraulic related failures.
- Demonstrate proper transmission removal, installation and start-up procedures.
- Disassemble, inspect, measure, and reassemble automatic transmissions to industry standards.

Major Topics to Be Included:

- Automatic Transmission/Transaxle Design, Theory, and Operation
- Automatic Transmission/Transaxle Hydraulic Control Systems
- Automatic Transmission/Transaxle Electronic Control Systems
- Torque Converter
- Lock-up and Control Mechanisms
- Apply Devices, Complex Gear Sets and Hydraulic Shift Controls
- Simpson Gear Train
- Tandem Gear Train
- Ravigneaux/Lepelletier Gear Train
- Compound Gear Trains
- Continuously Variable Transmission Design and Operation

Effective Date/Updated: January 19, 2023