

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

Course Prefix and Number: AUT 199

Credits: 2

Course Title: Automotive Systems

Course Description (including lecture hours, lab hours, total contacts)

Introduces fundamental systems of the automobile, the engine fuel, exhaust, electric, ignition, lubrication, cooling, transmission, steering, brake and suspension systems. Teaches theory and function of each system. Demonstrates operation. Lecture 2 hours per week.

General Course Purpose

To examine and perform basic diagnostic, repair and maintenance of automotive mechanical and electrical systems.

Course Prerequisites/Corequisites (*Entry-level competencies **required** for enrollment*)

None

Course Objectives (Each item should complete the following sentence.)

Upon completing the course, the student will be able to:

- a. Identify and demonstrate proper use of hand tools
- b. Demonstrate repair procedures according to manufacturer
- c. Knowledge of preventative maintenance procedures
- d. Demonstrate the use of power tools in the shop
- e. Develop an automotive terms list
- f. Explain the construction and operation and lubrication of automotive engines
- g. Describe the operation of engine fuel systems, cooling, ignition and exhaust systems
- h. Explain transmission/transaxle operation incorporated with drive lines and U-Joints
- i. Describe the automotive chassis, which includes the car frame, springs, shock dampening and absorbing, steering systems, brakes, tires and wheels

Major Topics to be Included

- a. Automotive Shop safety and Tools
 1. Jacks, Lifts, Pullers and Presses
 2. Shop Equipment and Power Tools
- b. Automotive Engines
 1. Basic Hand Tools
 2. Precision Measuring Tools
 3. Fasteners, Torque Wrenches
 4. Gaskets, Sealants, Seals and Adhesives
- c. Automotive Engine Systems:
 1. Engine Fuels
 2. Automotive Fuel and Exhaust Systems

3. Engine Lubricating Systems: Operation and Service
 4. Engine Cooling Systems and Cooling Systems Service
 5. Automotive Electrical and Electronics
- d. Automotive Power Trains:
1. Automotive Clutches: Service and Operation
 2. Manual Transmissions and Transaxles
 3. Automatic Transmissions and Transaxles
 4. Drive Lines and Universal Joints
 5. Differentials and Drive Axles: Construction and Service
- e. Automotive Chassis:
1. Springs and Suspension Systems
 2. Automotive Steering Systems
 3. Automotive Suspension Service
 4. Automotive Brakes
 5. Brake Service: Disc and Drum Service and Operation
 6. Tires and Wheels: Construction and Service
 7. MacPherson Struts: Front and Rear

Effective Date of Course Content Summary (Month, Date Year): February 9, 2009