



Course Outline

2026-2027 Catalog

AUT 21 - Automotive Brakes/Suspension and Steering Systems Lab

Catalog Description

Transfer Status: CSU

Prerequisite: AUT 3 (or concurrent enrollment)

Unit(s): 3.00

Lab: 153.00 Contact hours/0.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Total: 153.00 Contact hours/0.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: In this course students will develop and demonstrate the hands-on skills needed to verify, diagnose and repair vehicle systems, sub systems, and components. Topics include: brake systems including both drum and disc brake systems, Anti-lock Brake Systems (ABS), steering and suspension systems, and electronic steering and suspension systems.

Objectives

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

1. Diagnose and repair vehicle systems and components of disc brake systems.
2. Diagnose and repair vehicle systems and components of drum brake systems.
3. Diagnose and repair vehicle systems and components of anti-lock brake systems.
4. Diagnose and repair vehicle systems and components of suspension systems.
5. Diagnose and repair vehicle systems and components of steering systems.
6. Diagnose and repair vehicle systems and components of electronic steering/suspension systems.

Course Content

Topic Titles / Suggested Time Topic	
	<u>Lab</u>
<u>Topics</u>	<u>Lab Hrs</u>
Suspension systems.	15.00
Wheel servicing: safe removal and reinstallation of tires, alloy wheels, steel wheels and wheel bearings.	15.00
Shocks and struts.	15.00
Short arm/long arm and strut type suspensions.	15.00
Alignment readings using an alignment machine: adjustment of alignment angle discrepancies.	15.00
Rack and pinion, re-circulating ball and electronic assist steering systems.	15.00
Brake rotors, drums and linings.	15.00
Diagnose and repair hydraulic system components.	15.00
Drum, disc and parking brake type brake systems.	15.00
Electronic brake systems, including ABS, stability and traction control.	18.00
Total Hours: 153.00	

Methods of Instruction

- A. Special Studies/Problems
- B. Collaborative Group Work
- C. Discussion
- D. Instructor Demonstrations
- E. Laboratory Experiments
- F. Problem-Solving Sessions

Methods of Evaluation

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

Examples of Assignments

Reading Assignments

1. Read industry recognized technical information related to hydraulic systems and rebuild a faulty brake caliper.
2. Read lab assignment instructions pertaining to alignment procedures, then perform a four-way alignment on a vehicle.

Writing Assignments

1. Measure drum diameter on 6 drums and record results on a repair order with comparisons to specification. Create a written diagnosis on results for discussion.
2. Conclude an ABS problem diagnosis as per workbook assignment and communicate cause and cure on a legal repair order for customer review.

Out-of-Class Assignments

1. Not applicable

Recommended Materials of Instruction

Schnubel, M. & Knowles, D. (2025). Today's Technician: Automotive Steering and Suspension Systems, Class and Shop Manuals. *Cengage*, 8th. 9780357935323.

Pickerill, K. & Godson, M. (2025). Today's Technician: Automotive Brake Systems Classroom and Shop Manual. *Cengage*, 8th. 9780357766125.

Minimum Qualifications

Automotive Technology

Created/Revised by: Kielb, Craig

Date: 12/01/2025