SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLGIES & SKILLED TRADES DIVISION
DIESEL TECHNOLOGY - TRUCK
COURSE SYLLABUS
November 14, 2025

I. CATALOG DESCRIPTION

Course Number: DESL1240
Course Title: Hydraulics & Braking Systems
Prerequisite(s): DESL1111, DESL1116

Catalog Description: Principles and application of theory design, construction, and testing of hydraulic systems including pumps, actuators, reservoirs, accumulators, lines, fittings, filters, and fluids. Principles, components, operation, service, repair, adjustment and troubleshooting of the hydraulic brake system used on today's trucks, including safety, brake balance and anti-lock brakes. Principles, components, operation, service, repair, adjustment and troubleshooting of the air brake systems used on today's trucks, including safety, brake balance and anti-lock brakes.

Credit Hour: 6.0
Class Hours: 45
Lab Hours: 135
Total Contact Hours: 180

II. COURSE OBJECTIVES: *Course will:*

A. Give safety procedures related to the Hazard Communication and Globally Harmonized Systems, as well as, specific program rules for tool and equipment use.
B. Explain fundamental hydraulic principles.
C. Describe the function and design of hydraulic components.
D. Explain hydraulic system types and functions.
E. Explain the operation of a dual circuit brake system.
F. Describe the principles of operation of a hydraulic brake system.
G. Identify the components in a truck hydraulic brake system.
H. Describe the operation of disc and drum brakes in a hydraulic braking system.
I. Identify components of a truck air brake system.
J. Outline the operating principles of the valves and controls in an air brake system.
K. Explain the operation of a spring brake chamber.
L. Describe the operation of S cam disc and drum brakes.
M. Cover the components and operating principles of drum and disc air system.
N. Give the student the knowledge to identify brake system components, explain system operation, and diagnose system complaints.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

1. Abide by safety procedures related to the Hazard Communication and Globally Harmonized Systems, as well as, specific program rules for tool and equipment use.
2. Demonstrate the correct procedure to test and perform minor repairs on a hydraulic system.

3. Demonstrate the correct procedure to diagnose, service, repair, and adjust the hydraulic brake systems.
4. Demonstrate the correct procedure to diagnose, repair, adjust, and evaluate air brake system performance.

B. GENERAL EDUCATION LEARNING OUTCOMES:

GELO #3: Critical Thinking & Problem Solving

Outcomes:

1. Collect, identify, interpret and analyze data.
2. Synthesize information to arrive at reasoned solutions to problems.
3. Evaluate ideas presented in writing, medial, speech, or artistic presentations.
4. Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.
5. Acquire and integrate knowledge and construct relationships across disciplines

IV. CONTENT/TOPICAL OUTLINE

A. Safety
B. Introduction to hydraulics
C. Braking theory
D. System components
E. System operation
F. Boosters
G. Hydraulic brake system components
H. Hydraulic brake system operation
I. Theory of air brakes
J. Air brake system components
K. Air system operation
L. System inspection
M. Anti-lock brakes

V. INSTRUCTIONAL MATERIALS

The Course Information Document lists the current text(s), tools/equipment, and/or supplies required for this class. This list is also available from the campus bookstore.

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Lecture
2. Small and large group discussion
3. Video presentation
4. Transparencies
5. Demonstrations
6. Project boards
7. Handouts
8. Observations
9. Assigned lab projects
10. Field trips

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Notebook
2. Quizzes

3. Tests
4. Lab grades
5. Class conduct

Letter grades will be based on the SCC Standard Grade Scale Policy. **Note:** See course information document for specific details on how the course grades will be calculated.

VIII. SPECIFIC COURSE REQUIREMENTS

A. Students Must:

1. Complete all tests, projects, and assignments.
2. Earn a final grade of 70% (2.0) or higher.

B. Program shop safety rules will be followed. Please see the course information document for any additional safety rules established by the instructor.

C. Attendance:

1. Attendance is required for successful completion of this course.
2. This is an Engaged Learning course and students are expected to complete pre-class preparation assignments / homework and attend sessions for class, lab, including assignments missed due to absence.
3. Each instructor will inform students by means of a syllabus and Course Information Document of attendance requirements at the first-class meeting.
4. It is expected that students be on time and present for all scheduled class/lab times unless PRIOR arrangements have been made with the instructor.
5. Missed class or lab sessions, regardless of cause, reduces the opportunity for learning and may affect student achievement of course learning outcomes and the student's grades.
6. Students are responsible for all content missed, regardless of the reason for the absence.
7. Students must, whenever possible, notify the instructor if unable to attend any class/ lab session.
8. Emergency absences will be considered on an individual basis to determine if learning activities can reasonably be rescheduled during the current session.

D. Participation:

1. For every hour of classroom, learning students are expected to perform two hours of related studies as homework or hands-on/simulated/on-line activities outside the classroom.
2. Students are expected to be responsible for meeting scheduled class/lab/homework & assigned due dates unless prior arrangements have been made with the instructor 24 hours before the due date.
3. Students are expected to complete all exams, quizzes, lab activities and assignments / homework at the scheduled times unless PRIOR arrangements have been made with the instructor before the due date and time.
4. When reasonably possible, and only when prior arrangements have been made, students may ask the instructor to have a test or exam rescheduled prior to 24 hours before the activities scheduled date and time.
5. Unscheduled quizzes may be given at any time and may not be repeated or taken at a later time, unless approved by the instructor.
6. Exceptions due to emergency absences will be considered on an individual basis.

E. Retention Alert Policy and Procedures:

1. Any student who is struggling or doing poorly in class because of attendance, grades, or quality of lab work may have a Retention Alert sent by the instructor to the Student Retention Specialist (SRS) on the SCC Milford Campus.

2. The purpose of this retention alert is to facilitate communication between the instructor and the SRS so that the student can be contacted and offered appropriate help.
3. Typically, the SRS will attempt to contact the student via phone call, text message, and e-mail in order to set up a time for a personal visit.
4. During the visit, the SRS and the student will make plans or changes in student classroom strategies so that hopefully, the student will be successful in that class.
5. Success strategies may be the suggestion of working with a tutor, improving study skills, test taking skills, note taking skills or time management skills.
6. Any other problems that could be preventing the student from being successful in class can be discussed also.

F. Field Trip:

1. A field trip may be taken during this course to visit brake component manufacturing plants at Blue Springs, MO and Lola, KS.
2. The cost to students for food and lodging will be around $50.00.

G. Incomplete Grades:

1. If a student anticipates the need for a grade of incomplete in the course, the student will need to contact the Program Chair to request an “Incomplete Grade” agreement.
2. An incomplete grade will be considered on a case by case basis.