

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

I. CATALOG DESCRIPTION

Course Number: DESL2450

Course Title: Powertrain Systems

Prerequisite(s): DESL 1111, DESL 1116

Catalog Description: Lecture, demonstration and laboratory course encompassing the theory, operation, maintenance, diagnosis and repair of manual shift and auto-shift countershaft style transmissions. Clutch removal, troubleshooting, repair, installation and adjustment plus PTO installation and adjustment are also covered. Theory, operation, maintenance, diagnosis and repair of drivelines, truck final drives and related components.

Credit Hour: 6.0

Class Hours: 45

Lab Hours: 135

Total Contact Hours: 180

II. COURSE OBJECTIVES: *Course will:*

- A.** Cover safety procedures related to the Hazard Communication and Globally Harmonized Systems as well as specific program rules for tool and equipment use.
- B.** Cover operating principles and components of a clutch assembly.
- C.** Cover proper procedure for adjusting all aspects of a clutch assembly.
- D.** Discuss the use and setup of transfer cases and PTOs in heavy-duty truck operation.
- E.** Cover transmission power flows and gear ratio calculation.
- F.** Cover disassembly, inspection, diagnosis, repair and reassembly of countershaft style transmissions.
- G.** Cover driveline component identification, inspection, diagnosis and repair.
- H.** Cover failure analysis of powertrain systems.
- I.** Cover construction, operation, diagnosis and repair of a drive axle carrier assembly.

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. Properly use the hand tools, measuring instruments, special tools and equipment, inspection sheets and manuals required to perform the Course Objectives.

B. GENERAL EDUCATION LEARNING OUTCOMES:

GELO 4: Problem Solving

Outcomes:

The student will demonstrate the ability to define a problem, develop a plan to solve the problem, collect and analyze information, solve the problem, evaluate results, and define any need for further work.

IV. CONTENT/TOPICAL OUTLINE

- A.** Safety when working with transmissions and clutches
- B.** Clutch operation, troubleshooting, and adjustment
- C.** PTO installation and adjustment
- D.** Transmission, design, operation, adjustment and repair
- E.** Transmission air and electronic control systems

V. INSTRUCTIONAL MATERIALS

Required text(s): See Course Information Document for current textbook

Other materials: See current required tool list

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. Demonstrations
- 5. Handouts
- 6. Observations
- 7. Assigned lab projects
- 8. 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. Student must:

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

B. 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 will 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.

C. 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.

D. Program shop safety rules will be followed. Please see the course outline for any additional safety rules established by the instructor.