



## Course Number and Title: CTS 103 Tractor Trailer Operations

**Campus Location:**

Georgetown

**Effective Date:**

2019-51

**Prerequisite:**

ENG 090 or ENG 091 and MAT 005, SSC 100 or concurrent

**Co-Requisites:**

None

**Course Credits and Hours:**

3.00 credits

3.00 lecture hours/week

0.00 lab hours/week

**Course Description:**

In this course, students learn driving principles necessary for safe operation of a tractor-trailer vehicle on the highway, and explore the interaction between the vehicle and the highway traffic environment. Topics include hazard perception and response as well as emergency and evasive maneuvers. Students learn to apply safe operating principles and night operation techniques.

**Required Text(s):**

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

**Additional Materials:**

None

**Schedule Type:**

Classroom Course

**Disclaimer:**

None

**Core Course Performance Objectives (CCPOs):**

1. Identify, locate, and explain the function and use of the common controls and gauges on a truck tractor. (CCC 2; PGC 1)
2. Explain procedures to complete vehicle inspections. (CCC 1; PGC 2)
3. Discuss basic control principles necessary to operate a tractor-trailer vehicle in forward motion and reverse. (CCC 1; PGC 1)
4. Identify industry-accepted standards for coupling and uncoupling two-unit combination commercial vehicles. (CCC 1; PGC 4)
5. Explain the principles and procedures for performing visual searches of the roadway for potential hazards and critical objects. (CCC 1; PGC 1)
6. Discuss the techniques for different types of communication on the road. (CCC 1; PGC 1)
7. Recognize effective speed management practices in response to various road, weather, and traffic conditions. (CCC 4; PGC 1)
8. Identify strategies to enable proper management of space required for safe vehicle operation. (CCC 2; PGC 1)
9. Identify the precautions and safety considerations to safely operate a tractor-trailer during nighttime conditions. (CCC 4; PGC 1)
10. Discuss adjustments for driving in extreme conditions. (CCC 1; PGC 1)
11. Describe potential dangers in the driving environment and appropriate defensive actions. (CCC 1; PGC 1)
12. Recognize potential dangers and appropriate safety practices at railroad crossings. (CCC 2; PGC 1)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

## Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Identify, locate, and explain the function and use of the common controls and gauges on a truck tractor.
  1. Identify, locate, and explain the function of each of the primary and secondary controls on a truck tractor.
  2. Identify, locate, explain, and indicate the acceptable reading range of the various instruments required to monitor vehicle and engine speed as well as the status of fuel, oil, air, cooling, exhaust, and electrical systems.
  3. Explain how to read and use gauge information in making on-going decisions.
  4. Explain the purpose and use of an inter-axle differential lock.
  5. Explain the purpose, use, and possible consequences of improper use of engine retarders.
2. Explain procedures to complete vehicle inspections.
  1. Describe a systematic procedure to ensure quick and complete vehicle inspections.
  2. Discuss the effect of undiscovered malfunctions upon safety, vehicle effectiveness, and economy.
  3. Explain regulations governing vehicle inspections and cargo securement.
  4. Identify the Commercial Vehicle Safety Alliance out-of-service criteria.
3. Discuss basic control principles necessary to operate a tractor-trailer vehicle in forward motion and reverse.
  1. Discuss the concept that safety is an attitude.
  2. Explain the clearance requirements of tractor-trailers of various dimensions.
  3. Explain the starting, warm-up, and shut down procedures for heavy-duty truck engines.
  4. Discuss modulation procedures for air brakes.
  5. Explain steering techniques to track a combination vehicle in lane and drive a straight-line.
  6. Illustrate the proper position from which a combination vehicle should begin a turn, and how to set-up, execute, and recover from a turn.
  7. Explain proper hand placement on the steering wheel.
  8. Explain shifting procedures and patterns for different transmissions.
  9. Explain instruments and controls necessary to shift gears.
  10. Discuss common shifting errors and their consequences.
  11. Explain which gear most likely will be the best choice for various highway, traffic, turning, and terrain conditions.
  12. Explain the importance of matching revolutions per minute (RPM) with miles per hour (MPH) in shifting.
  13. Explain proper mirror adjustment and use.
  14. Explain procedures for backing a tractor-trailer combination in a straight-line and along a curved path.
  15. Identify and explain hazards of backing, and discuss possible alternative strategies.
4. Identify industry-accepted standards for coupling and uncoupling two-unit combination commercial vehicles.
  1. Explain coupling and uncoupling procedures according to the Model Commercial Driver's License Manual.
5. Explain the principles and procedures for performing visual searches of the roadway for potential hazards and critical objects.
  1. Explain the correct adjustments and use for various types of mirrors.
  2. Explain the search patterns appropriate for straight driving, changing speed and direction, and entering or crossing traffic.
  3. Explain the importance of visual searches in reducing fatigue and critical techniques for monitoring changing road and traffic conditions.
6. Discuss the techniques for different types of communication on the road.
  1. Discuss the importance of proper communication techniques for safe operation.
7. Recognize effective speed management practices in response to various road, weather, and traffic conditions.
  1. Explain the relationship of speed to stopping distance, hydroplaning, crash severity, ability to maneuver, and fuel economy.
  2. Discuss the effect on maximum safe speed of vehicle weight, center of gravity, loss of stability, available sight distance, and road surface conditions.
8. Identify strategies to enable proper management of space required for safe vehicle operation.
  1. Explain the appropriate following distances for various conditions.
  2. Discuss the importance of maintaining maximum separation from other vehicles to ensure room to maneuver when responding to errors of other drivers.
  3. Identify dangers created by overhead obstructions.
9. Identify the precautions and safety considerations to safely operate a tractor-trailer during nighttime conditions.
  1. Explain how to operate safely at night, and discuss the risks of night driving.
10. Discuss adjustments for driving in extreme conditions.
  1. Discuss adjustments for driving in cold and hot weather, stormy conditions, and mountains and deserts.
11. Describe potential dangers in the driving environment and appropriate defensive actions.
  1. Identify road and traffic conditions that present a hazard to safe operations.
  2. Identify characteristics and activities of other road users that make them potentially dangerous.
  3. Discuss appropriate reactions to various hazards and how to prevent them from becoming emergency situations.
  4. Discuss appropriate responses when confronted with driving emergencies, including brake failure and blowouts.
  5. Identify causes and explain preventive measures and recovery techniques involved in skidding and jackknifing incidents.
12. Recognize potential dangers and appropriate safety practices at railroad crossings.
  1. Identify hazards associated with passive and marked railroad crossings.

**Evaluation Criteria/Policies:**

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

**Core Curriculum Competencies (CCCs are the competencies every graduate will develop):**

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

**Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**

1. Operate a tractor-trailer equipped with a multi-range, non-synchronized transmission on the public roadways.
2. Identify mechanical defects in the performance of pre-trip, en-route, and post-trip vehicle inspections.
3. Operate a tractor-trailer in reverse through a series of maneuvering exercises accordance to State of Delaware licensing standards.
4. Perform safe coupling and uncoupling of typical tractor-trailer units.
5. Explain safe cargo handling and documentation.
6. Explain safe and legal procedures at an accident scene and proper reporting of accidents.
7. Plan an interstate trip including map reading/route selection, calculating driving time and fuel consumption, estimating distances, personal expenses, and personal needs.
8. Identify, explain and comply with the Federal Motor Carrier Safety Regulations Part 390 – 397, 380, 382 and 383.
9. Explain the driver's role in the trucking industry and the role of trucking in our nation's economy and security.
10. Create a professional job search and job retention plan.

**Disabilities Support Statement:**

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.