

Florida Department of Education  
Curriculum Framework

**Program Title:** Construction Vehicle Technician  
**Program Type:** Career Preparatory  
**Career Cluster:** Transportation, Distribution and Logistics

Career Certificate Program – Career Preparatory	
Program Number	T650500
CIP Number	0649020202
Grade Level	30, 31
Standard Length	600 hours
Teacher Certification	Refer to the <b>Program Structure</b> section
CTSO	SkillsUSA
SOC Codes (all applicable)	47-2073 – Operating Engineers and Other Construction Equipment Operators 53-3033 – Light Truck or Delivery Service Drivers
CTE Program Resources	<a href="http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml">http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml</a>
Basic Skills Level	Mathematics: 8 Language: 8 Reading: 8

**Purpose**

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Transportation, Distribution and Logistics career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Transportation, Distribution and Logistics career cluster.

The purpose of this program is to prepare students for employment as Construction Vehicle Operators/dump truck drivers, (SOC 53-3033) and Construction Equipment Operators (SOC 47-2073).

The content includes but is not limited to the following: operation of construction vehicles, loading and unloading cargo; reporting delays or accidents on the road; verifying load against shipping papers; and keeping records. The course content should also include instruction in human relations, leadership, communication, and employability skills, and safe, efficient work practices.

**Additional Information** relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

## **Program Structure**

This program is a planned sequence of instruction consisting of three occupational completion points.

This program is comprised of courses which have been assigned course numbers in the SCNS (Statewide Course Numbering System) in accordance with Section 1007.24 (1), F.S. Career and Technical credit shall be awarded to the student on a transcript in accordance with Section 1001.44(3) (b), F.S.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the postsecondary program structure:

OCP	Course Number	Course Title	Teacher Certification	Length	SOC Code
A	TRA0073	Construction Vehicle Driver	COMM DRIV @7 7G OPER ENGR @7 7G	200 hours	53-3033
B	TRA0074	Construction Vehicle Maintenance Technician		150 hours	47-2073
C	TRA0075	Construction Vehicle Operator		250 hours	47-2073

## **Common Career Technical Core – Career Ready Practices**

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

## **Standards**

After successfully completing this program, the student will be able to perform the following:

- 1.0 Understand vehicle safety and accident prevention procedures.
- 2.0 Understand and comply with vehicle operating regulations.
- 3.0 Demonstrate proper cargo handling and documentation procedures.
- 4.0 Demonstrate trip planning preparation procedures.
- 5.0 Demonstrate vehicle inspection procedures.
- 6.0 Perform vehicle maintenance and servicing procedures.
- 7.0 Demonstrate basic vehicle control procedures.
- 8.0 Demonstrate backing skills and basic vehicle maneuvers.
- 9.0 Demonstrate road driving skills.
- 10.0 Demonstrate hazardous driving skills.
- 11.0 Apply concepts learned for obtaining a Commercial Driver's License (CDL).
- 12.0 Demonstrate understanding of procedures.
- 13.0 Demonstrate understanding of operation and maintenance of mechanical systems and engines.
- 14.0 Operate construction equipment as applicable.

**Florida Department of Education  
Student Performance Standards**

**Program Title: Construction Vehicle Technician**  
**Career Certificate Program Number: T650500**

**Course Number: TRA0073**  
**Occupational Completion Point: A**  
**Construction Vehicle Driver – 200 Hours – SOC Code 53-3033**

**Course Description:**

The Construction Vehicle Driver course prepares students for entry into the construction vehicle industry. Students explore career opportunities and requirements of a construction vehicle driver. Students study vehicle safety, accident prevention, operating regulations, cargo handling, documentation procedures, pre-trip preparation, vehicle inspection, maintenance, service, control procedures, backing, maneuvering, road and hazardous driving skills, and licensing requirements.

<b>CTE Standards and Benchmarks</b>	
1.0	Understand vehicle safety and accident prevention procedures.--The student will be able to:
1.1	Understand, identify and explain the use of vehicle safety equipment.
1.2	Understand the use of fire extinguishers.
1.3	Utilize seat belts and personal protection gear appropriate to type of operation.
1.4	Describe safe lifting procedures.
1.5	Describe personal safety equipment and procedures.
1.6	Describe actions applicable for vehicle accidents.
1.7	Complete reports in a classroom activity.
1.8	Understand accident reporting requirements (company, state, federal).
1.9	Identify all information needed for accident reports to the State, the employer and the insurance company.
1.10	Complete an accident report.
1.11	Describe procedures for protecting the scene of an accident.
1.12	Describe personal liability requirements.
1.13	Identify hazardous road conditions that are a potential threat to the safety of the truck driver.
1.14	Describe activities and characteristics of other road users that make them potentially dangerous.

1.15	Describe the potential consequences of excessive speed.
1.16	Describe the potential consequences of use of drugs or alcohol.
1.17	Describe and demonstrate safety procedures for entering and exiting vehicles.
2.0	Understand and comply with vehicle operating regulations.--The student will be able to:
2.1	Understand and comply with Hours of Service regulations.
2.2	Maintain a complete, neat and accurate driver's duty status log including discussion of electronic logs.
2.3	Keep accurate records required by hours of service regulations.
2.4	Perform mathematical calculations necessary to recap and apply totals to the hours of service regulations.
2.5	Determine driving hours remaining on a particular day or tour of duty.
2.6	Understand and comply with applicable United States Department of Transportation regulations including Federal Motor Carrier Safety Administration rules and regulations - Compliance, Safety, and Accountability (CSA) particularly the role of drivers and motor carriers.
2.7	Understand and comply with Federal, State and local traffic laws including restrictions on vehicle size and weight including permits when required.
3.0	Demonstrate proper cargo handling and documentation procedures.--The student will be able to:
3.1	Understand how to load and unload cargo safely and efficiently.
3.2	Understand legal gross weight and axle weight.
3.3	Describe cargo load to meet legal weight and safety requirements.
3.4	Understand how to secure cargo using blocking, bracing, packing, rope, cable, chains and strapping.
3.5	Identify types of hazardous cargoes.
3.6	Understand the placement of placards when carrying hazardous materials.
3.7	Understand procedure for use of common cargo handling equipment, including pallets, jacks, dollies, hand-trucks, nets, slings, poles and other equipment.
3.8	Understand categories of hazardous materials and the need for specialized training to handle hazardous materials.
3.9	Understand hazardous materials documentation requirements.
3.10	Verify nature, amount and condition of cargo on both pickup and delivery.
3.11	Verify information on bill of lading and properly record and report discrepancies and damage to the cargo.
3.12	Verify appropriate signatures on delivery receipts and other required forms.
3.13	Prepare a bill of lading/manifest.
3.14	Verify door seal number against shipping document.
3.15	Describe the handling of C.O.D. shipments.

3.16	Comply with inspection station procedures.
<b>4.0</b>	<b>Demonstrate trip planning preparation procedures.--The student will be able to:</b>
4.1	Check vehicle registration and permit.
4.2	Check accident report packets for proper contents.
4.3	Plan a route from one point to another that is optimal in terms of travel time, fuel costs, potential hazards and federal, state and local travel restrictions.
4.4	Describe the use of manual and contemporary GPS navigation systems.
4.5	Arrange a secure place for vehicle on layovers, especially when transporting hazardous materials.
4.6	Demonstrate map reading skills.
4.7	Estimate travel time and plan rest stops and layovers.
4.8	Estimate fuel consumption and plan fuel stops.
4.9	Estimate expense money and obtain funds and/or credit cards.
<b>5.0</b>	<b>Demonstrate vehicle inspection procedures.--The student will be able to:</b>
5.1	Check for previous days DVIR.
5.2	Check general appearance and condition of vehicle.
5.3	Check fuel, oil, water levels, automatic transmission fluid level and diesel emissions fluid (DEF).
5.4	Check signal lights, stoplights and running lights.
5.5	Check tires, rims and suspension.
5.6	Check horn, windshield wipers, mirrors and reflectors.
5.7	Check emergency bi-directional reflective triangles and fire extinguishers.
5.8	Check instruments for normal readings.
5.9	Check steering system, brake action and tractor protection valve.
5.10	Check cargo blocking, bracing and tie down.
5.11	Perform enroute inspections.
5.12	Perform post-trip inspection of vehicle and all systems.
<b>6.0</b>	<b>Perform vehicle maintenance and servicing procedures.--The student will be able to:</b>
6.1	Describe function and operation of principle vehicle systems including, engine, engine auxiliary brake, drive train, coupling, suspension and electrical system, DEP engines, and regeneration processes where applicable.
6.2	Check engine fuel, oil, coolant, battery and filters.
6.3	Check tire air pressure.

6.4	Check for proper tire and wheel mounting.
6.5	Drain moisture from air brake supply reservoirs.
6.6	Check brakes and related systems.
6.7	Clean and repair lights.
6.8	Check fuses and reset circuit breakers.
6.9	Clean interior and exterior of vehicle.
6.10	Check mud/rain flaps.
7.0	Demonstrate basic vehicle control procedures.--The student will be able to:
7.1	Place transmission in neutral before starting engine.
7.2	Start, warm up and shut down the engine, according to the manufacturer's specifications.
7.3	Build full pressure (120-140 PSI) in air tanks or to governed cut-out.
7.4	Test parking brake and service brake before moving/driving vehicle.
7.5	Coordinate use of accelerator and clutch to achieve smooth acceleration and avoid clutch abuse.
7.6	Maintain proper engine RPM while driving.
7.7	Properly modulate air brakes to bring vehicle to a smooth stop.
7.8	Properly shift up and down through all gears using clutch.
7.9	Double clutch non-synchronized transmissions and time shift for smooth and fuel efficient performance.
7.10	Select proper gear for speed and highway conditions.
7.11	Operate automatic and semiautomatic transmissions.
7.12	Coordinate steering, braking and acceleration to take the vehicle through a desired path forward and backward in a straight line.
7.13	Use clutch and gears to maintain proper operating range/power/RPM of the motor while slowing the vehicle.
7.14	Park the vehicle, set brakes and shut off the engine.
7.15	Properly chock/block wheels where and when required.
8.0	Demonstrate backing skills and basic vehicle maneuvers.--The student will:
8.1	Check area before and during backing.
8.2	Properly utilize guides and mirrors.
8.3	Properly back in straight line and curved paths.
8.4	Properly back into an alley dock.
8.5	Back 100 feet through an alley.



8.6	Make proper straight in approach during offset backing maneuvers.
8.7	Properly position unit for backing into a loading dock.
8.8	Properly back to a dock. (actual or simulated)
8.9	Properly stop unit within 36 inches of the dock without contacting dock. (actual or simulated)
8.10	Properly Parallel Park.
8.11	Judge side, rear and overhead clearances and path of the trailer.
8.12	Make a straight-in approach to an alley.
8.13	Drive forward through an alley for 100 feet.
9.0	Demonstrate road driving skills.--The student will be able to:
9.1	Carefully enter traffic from parked position.
9.2	Use clutch and gears properly.
9.3	Proceed from a stopped position without rolling backward.
9.4	Use mirrors properly.
9.5	Signal intention to turn well in advance of turn.
9.6	Get into proper lane well in advance of turn.
9.7	Check traffic conditions and turn only when intersection is clear.
9.8	Restrict traffic from passing on right when preparing to complete a right hand turn. Maintain 3 feet or less on right side of vehicle.
9.9	Execute a right hand turn maintaining 3 feet or less on right side of vehicle.
9.10	Complete a turn promptly and safely and not impede other traffic.
9.11	Select and shift to proper gear prior to beginning any turn.
9.12	Obey all traffic signals.
9.13	Plan stop in advance and adjust speed correctly.
9.14	Use brakes properly on grades.
9.15	Plan stops far enough in advance to avoid hard braking.
9.16	Stop clear of crosswalks.
9.17	Come to a complete stop at all stop signs.
9.18	Yield right of way at intersections having yield signs.
9.19	Check for cross traffic regardless of traffic signals.
9.20	Approach all intersections prepared to stop if necessary.

9.21	Stop a minimum of 15 feet but not more than 50 feet before railroad grade crossing if stop is necessary.
9.22	Select proper gear to avoid shifting gears on railroad grade crossing.
9.23	Determine sufficient space required for passing.
9.24	Pass only in safe locations.
9.25	Pass on two-lane highway, only when safe to do so.
9.26	Pass on four or more lane highway.
9.27	Signal lane changes before and after passing.
9.28	Pass only when appropriate to avoid impeding other traffic.
9.29	Return to right lane promptly, but only when safe to do so.
9.30	Observe speed limits.
9.31	Adjust speed properly to road, weather and traffic conditions.
9.32	Slow down in advance of curves, danger zones and intersections.
9.33	Maintain consistent speed where possible.
9.34	Yield right of way.
9.35	Allow faster traffic to pass.
9.36	Understand or demonstrate the proper procedures for navigating a weigh station.
9.37	Use horn only when necessary.
9.38	Park only in legally permissible parking areas.
9.39	Check instruments at regular intervals.
9.40	Maintain proper engine RPM while driving.
9.41	Determine minimum front-to-rear distances when following other vehicles using industry recognized standards.
10.0	Demonstrate hazardous driving skills.--The student will be able to:
10.1	Understand preparation for operation in cold weather.
10.2	Demonstrate proper procedure for expelling moisture from the air tanks after each trip.
10.3	Understand proper procedure for checking ice accumulation on brakes, slack adjuster, air hoses, electrical wiring and radiator shutters during operation.
10.4	Perform operational adjustments necessary to maintain control in all weather conditions, including speed selection, braking and following distance.
10.5	Describe procedures to check safe operation of brakes after driving through deep water.
10.6	Perform proper use of windshield wipers, washers and defrosters to maintain visibility.

10.7	Observe and evaluate changing road surface conditions.
10.8	Demonstrate or understand ability for recognizing conditions that produce low traction, including initial rainfall, ice, snow and mud.
10.9	Describe and understand procedures to avoid skidding.
10.10	Understand procedures to avoid hydroplaning and describe the road and vehicle conditions that produce it.
10.11	Understand procedures for mounting and dismounting tire chains.
10.12	Understand procedures for extricating the vehicle from snow, sand and mud by maneuvering or towing.
10.13	Demonstrate ability to adjust rate of change in speed and direction to accommodate road conditions to avoid skidding.
10.14	Describe procedures required to coordinate acceleration and shifting to overcome the resistance of snow, sand and mud.
10.15	Demonstrate ability to perform brake checks on equipment prior to mountain driving.
10.16	Understand procedures required to use right lane or special truck lane going up grades.
10.17	Understand procedures required to place transmission in appropriate gear for engine braking before starting downgrade.
10.18	Understand procedures required to use proper braking techniques and maintain proper engine braking before starting downgrades.
10.19	Understand proper use of truck escape ramp when brakes fail on a downgrade.
10.20	Understand procedure required for observing temperature gauge frequently when pulling heavy loads up long grades.
10.21	Understand the effect of vehicle weight and speed upon braking and shifting ability on long downgrades.
10.22	Identify the meaning and use of percent of grade signs.
10.23	Understand bringing the truck to a stop in the shortest possible distance while maintaining directional control on a dry surface.
10.24	Understand procedures to make an evasive turn off the roadway and return to the roadway while maintaining directional control.
10.25	Understand procedures to bring the vehicle to a stop in the event of a brake failure.
10.26	Understand procedures to maintain control of the vehicle in the event of a blowout.
10.27	Understand procedures to bring truck to a stop in the shortest possible distance while maintaining directional control when operating on a slippery surface.
10.28	Understand procedures to recover from vehicle skids induced by snow, ice, water, oil, sand, wet leaves or other slippery surfaces.
10.29	Understand procedures to counter-steer out of a skid in a way that will regain directional control and not produce another skid.
10.30	Understand procedure to operate brakes properly to provide maximum braking without loss of control.
11.0	Apply concepts learned for obtaining a Commercial Driver's License (CDL).--The student will be able to:
11.1	Demonstrate competence in performing basic Commercial Vehicle Driving skills utilizing the CDL testing criteria.
11.2	Demonstrate understanding and knowledge of Commercial Vehicle Driving Laws as required, to safely and legally operate a commercial vehicle.

Florida Department of Education  
 Student Performance Standards

**Course Number: TRA0074**  
**Occupational Completion Point: B**  
**Construction Vehicle Maintenance Technician – 150 Hours – SOC Code 47-2073**

**Course Description:**

The Construction Vehicle Maintenance Technician course prepares students for entry into the construction vehicle operations industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study shop safety, mechanical systems, and engines.

<b>CTE Standards and Benchmarks</b>	
12.0	Demonstrate understanding of procedures.--The student will be able to:
12.1	Apply safety practices during operation of construction equipment.
12.2	Discuss function of each piece of heavy equipment as appropriate.
12.3	Turn and back-up equipment safely.
12.4	Operate equipment on roadway safely.
13.0	Demonstrate understanding of operation and maintenance of mechanical systems and engines.--The student will be able to:
13.1	Perform preventive maintenance on equipment including greasing, changing oil, and replacing filters.
13.2	Perform additional maintenance based on specific equipment needs.
13.3	Safety check equipment prior to operation.

Florida Department of Education  
 Student Performance Standards

**Course Number: TRA0075**  
**Occupational Completion Point: C**  
**Construction Equipment Operator – 250 Hours – SOC Code 47-2073**

**Course Description:**

The Construction Equipment Operator course is designed to build on the skills and knowledge students for entry into the construction vehicle operator and technician industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study safe tractor operations, back hoe, motor grader and dump truck operations.

<b>CTE Standards and Benchmarks</b>	
1.0	Operate construction equipment (operating engineer).--The student will be able to:
1.1	Apply safety procedures.
1.2	Review “Construction Industry Manufactures Association” safety manuals.
1.3	Safely load dump truck.
1.4	Operate alternative equipment as applicable.

## **Additional Information**

### **Laboratory Activities**

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

### **Special Notes**

Students entering this program must exhibit a safe driving record, be at least 18 years of age and comply with State and Federal licensing requirements as outlined by the Federal Motor Carrier Safety Administration (FMCSA). Instruction will include 200 miles of road driving under the supervision of a qualified commercial vehicle driver prior to completion of the program. Road driving activities will include experience on two-lane, four-lane, interstate, and city streets and highways. Twenty percent or more of the experience will occur at night on both wet and/or dry roads. All students with a Commercial Learners Permit (CLP) must be accompanied by an instructor. Instruction in driving bob-tail, empty and loaded vehicles will be given.

Recommended student to instructor ratios:

Classroom – 12 to 1

Lab – Variable

Range – 6 to 1

Road Instruction – 4 to 1 per vehicle

MyCareerShines is an interactive resource to assist students in identifying their ideal career and to enhance preparation for employment. Teachers are encouraged to integrate this resource into the program curriculum to meet the employability goals for each student. Access MyCareerShines by visiting: [www.mycareershines.org](http://www.mycareershines.org).

### **Career and Technical Student Organization (CTSO)**

SkillsUSA is the intercurricular career and technical student organization(s) providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered. The activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, F.A.C.

### **Cooperative Training – OJT**

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

## **Basic Skills**

In a Career Certificate Program offered for 450 hours or more, in accordance with Rule 6A-10.040, F.A.C., the minimum basic skills grade levels required for postsecondary adult career and technical students to complete this program are: Mathematics 8.0, Language 8.0, and Reading 8.0. These grade level numbers correspond to a grade equivalent score obtained on a state designated basic skills examination.

Adult students with disabilities, as defined in Section 1004.02(7), Florida Statutes, may be exempted from meeting the Basic Skills requirements (Rule 6A-10.040). Students served in exceptional student education (except gifted) as defined in s. 1003.01(3)(a), F.S., may also be exempted from meeting the Basic Skills requirement. Each school district and Florida College must adopt a policy addressing procedures for exempting eligible students with disabilities from the Basic Skills requirement as permitted in Section 1004.91(3), F.S.

Students who possess a college degree at the Associate of Applied Science level or higher; who have completed or are exempt from the college entry-level examination; or who have passed a state, national, or industry licensure exam are exempt from meeting the Basic Skills requirement (Rule 6A-10.040, F.A.C.) Exemptions from state, national or industry licensure are limited to the certifications listed on the Basic Skills and Licensure Exemption List which may be accessed from the CTE Program Resources page.

## **Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

Note: postsecondary curriculum and regulated secondary programs cannot be modified.

## **Additional Resources**

For additional information regarding articulation agreements, Bright Futures Scholarships, Fine Arts/Practical Arts Credit and Equivalent Mathematics and Equally Rigorous Science Courses please refer to:

<http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml>