

Florida Department of Education
Curriculum Framework

Program Title: Heavy Equipment Operations Technician
Program Type: Career Preparatory
Career Cluster: Transportation, Distribution and Logistics

Career Certificate Program – Career Preparatory	
Program Number	T440200
CIP Number	0649020201
Grade Level	30, 31
Standard Length	1200 hours
Teacher Certification	Refer to the Program Structure section
CTSO	SkillsUSA
SOC Codes (all applicable)	47-2073 – Operating Engineers and Other Construction Equipment Operators 53-7021 – Crane and Tower Operators
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml
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 content includes but is not limited to, communication skills, leadership skills, human relations and employability skills, safe and efficient work practices, and skills to operate and maintain a variety of heavy equipment such as crawler tractors, motor graders, scrapers and shovels or cranes. Students training on one machine must complete all related program content.

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 four 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	TRA0070	Heavy Equipment Maintenance Technician	OPER ENGR @7 7G	150 hours	47-2073
B	TRA0086	Tractor Operator		150 hours	47-2073
C	TRA0087	Off-road Equipment Operator 1		300 hours	47-2073
D	TRA0088	Off-road Equipment Operator 2		300 hours	47-2073
E	TRA0049	Crane Operator		300 hours	53-7021

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 Demonstrate understanding of safety procedures.
- 2.0 Demonstrate understanding of operation and maintenance of mechanical systems and engines.
- 3.0 Operate pneumatic and crawler -type tractor with attachments.
- 4.0 Operate a back hoe.
- 5.0 Operate a motor grader.
- 6.0 Utilize utility construction equipment as applicable.
- 7.0 Operate crane or alternative equipment (operating engineer).

Florida Department of Education
 Student Performance Standards

Program Title: Heavy Equipment Operations Technician
 Career Certificate Program Number: T440200

Course Number: TRA0070
 Occupational Completion Point: A
 Heavy Equipment Maintenance Technician – 150 Hours – SOC Code 47-2073

Course Description:

The Heavy Equipment Maintenance Technician course prepares students for entry into the Heavy Equipment Operations industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study shop safety, mechanical systems, and engines.

CTE Standards and Benchmarks	
1.0	Demonstrate understanding of safety procedures.--The student will be able to:
1.1	Apply safety practices during operation of heavy equipment.
1.2	Discuss function of each piece of heavy equipment as appropriate.
1.3	Turn and back-up equipment safely.
1.4	Operate equipment on roadway safely.
2.0	Demonstrate understanding of operation and maintenance of mechanical systems and engines.--The student will be able to:
2.1	Perform preventive maintenance on equipment including greasing, changing oil, and replacing filters.
2.2	Perform additional maintenance based on specific equipment needs.
2.3	Safety check equipment prior to operation.

**Florida Department of Education
Student Performance Standards**

Course Number: TRA0086
Occupational Completion Point: B
Tractor Operator – 150 Hours – SOC Code 47-2073

Course Description:

The Tractor Operator course is designed to build on the skills and knowledge students learned in the Heavy Equipment Maintenance Technician course for entry into the Heavy Equipment Operations industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students' study pneumatic, and crawler-type tractor operations.

CTE Standards and Benchmarks	
3.0	Operate pneumatic and crawler-type tractor with attachments.--The student will be able to:
3.1	Move, level, and spread top soil.
3.2	Remove stumps.
3.3	Pile debris for burning.
3.4	Remove and replace dozer blade.
3.5	Remove and replace bucket.
3.6	Attach cutting teeth as needed.
3.7	Safely load dump trucks.

Florida Department of Education
Student Performance Standards

Course Number: TRA0087
Occupational Completion Point: C
Off-road Equipment Operator 1 – 300 Hours – SOC Code 47-2073

Course Description:

The Off-road Equipment Operator 1 course is designed to build on the skills and knowledge students learned in the Tractor Operator course for entry into the Heavy Equipment Operations industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study back hoe, and motor grader operations.

CTE Standards and Benchmarks	
4.0	Operate a back hoe.--The student will be able to:
4.1	Dig pit to specified grade.
4.2	Observe for cables, pipes, and underground utilities.
4.3	Dig ditches for drainage and pipes.
4.4	Install bucket teeth to back hoe
5.0	Operate a motor grader.--The student will be able to:
5.1	Grade to specific levels.
5.2	Apply use of grading stakes when operating motor grade.
5.3	Build a road-bed.
5.4	Perform blue-top grade (finish).
5.5	Change blade and scarifier teeth on motor grader.

Course Number: TRA0088
Occupational Completion Point: D
Off-road Equipment Operator 2 – 300 Hours – SOC Code 47-2073

Course Description:

The Off-road Equipment Operator 2 course is designed to build on the skills and knowledge students learned in the Off-road Equipment Operator 1 course for entry into the Heavy Equipment Operations industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study utility construction equipment operation.

CTE Standards and Benchmarks	
6.0	Utilize utility construction equipment as applicable.--The student will be able to:
6.1	Operate scraper.
6.2	Operate trencher.
6.3	Operate tar kettle.
6.4	Operate rollers.
6.5	Operate concrete mixer.

Florida Department of Education
Student Performance Standards

Course Number: TRA0049
Occupational Completion Point: E
Crane Operator – 300 Hours – SOC Code 53-7021

Course Description:

The Crane Operator course is designed to build on the skills and knowledge students learned in the Off-road Equipment Operator 1 & 2 courses for entry into the Heavy Equipment Operations industry. Content emphasizes beginning skills and concepts as a recommended requisite. Students study crane or alternative equipment operation.

CTE Standards and Benchmarks	
7.0	Operate a crane or alternative equipment (operating engineer).--The student will be able to:
7.1	Apply safety procedures.
7.2	Review “Construction Industry Manufactures Association” safety manuals.
7.3	Operate crane with drag bucket, clamshell, and hook. (Optional)
7.4	Load dump truck with crane. (Optional)
7.5	Operate alternative equipment

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

The purpose of this program is to prepare students for initial employment with occupational titles as operating engineers (SOC 47-2073). **Schools may elect to train on heavy equipment unique to their Local employment area in OCP C, D, and E as an instructional option.**

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the Heavy Equipment industry; planning, management, finance, technical and product skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

Many areas of the state do not have the need to train crane operators. To assist business and industry and provide solutions for students needing training on alternative pieces of equipment; requiring the same number of hours (300), alternative equipment to meet the requirements of Occupational Completion Point E may be used.

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.

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.shtml>