

2011 – 2012

**Florida Department of Education  
Curriculum Framework**

**Program Title:** Heavy Equipment Operation  
**Program Type:** Career Preparatory  
**Career Cluster:** Transportation, Distribution and Logistics

PSAV	
Program Number	I490202
CIP Number	0649.020200
Grade Level	30, 31
Standard Length	1200 Hours
Teacher Certification	OPER ENGR @7 G
CTSO	SkillsUSA
SOC Codes (all applicable)	47-2073, 53-7021
Facility Code	245 <a href="http://www.fldoe.org/edfacil/sref.asp">http://www.fldoe.org/edfacil/sref.asp</a> (State Requirements for Educational Facilities)
Targeted Occupation List	<a href="http://www.labormarketinfo.com/wec/TargetOccupationList.htm">http://www.labormarketinfo.com/wec/TargetOccupationList.htm</a>
Perkins Technical Skill Attainment Inventory	<a href="http://www.fldoe.org/workforce/perkins/perkins_resources.asp">http://www.fldoe.org/workforce/perkins/perkins_resources.asp</a>
Industry Certifications	<a href="http://www.fldoe.org/workforce/fcpea/default.asp">http://www.fldoe.org/workforce/fcpea/default.asp</a>
Basic Skills Level	Mathematics: 8.0 Language: 8.0 Reading: 8.0

### 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.

### Program Structure

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

When offered at the post secondary adult career and technical level, 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.

The following table illustrates the program structure:

OCP	Course Number	Course Title	Course Length	SOC Code
A	TRA0070	Heavy Equipment Maintenance Technician	150	47-2073
B	TRA0086	Tractor Operator	150	47-2073
	TRA0087	Off-road Equipment Operator 1	300	47-2073
C	TRA0088	Off-road Equipment Operator 2	300	47-2073
D	TRA0049	Crane Operator	300	53-7021

### Laboratory Activities

Laboratory activities are an integral part of this program. These activities include instruction in the use of safety procedures, tools, equipment, materials, and processes related to these occupations. 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 and D 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 D may be used.

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

SkillsUSA is the appropriate career and technical student organization for 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 program-specific OJT framework apply.

## **Essential Skills**

Essential skills identified by the Division of Career and Adult Education have been integrated into the standards and benchmarks of this program. These skills represent the general knowledge and skills considered by industry to be essential for success in careers across all career clusters. Students preparing for a career served by this program at any level should be able to demonstrate these skills in the context of this program. A complete list of Essential Skills and links to instructional resources in support of these Essential Skills are published on the CTE Essential Skills page of the FL-DOE website ([http://www.fldoe.org/workforce/dwdframe/essential\\_skills.asp](http://www.fldoe.org/workforce/dwdframe/essential_skills.asp)).

## **Basic Skills (if applicable)**

In PSAV programs 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. Students may be exempt from meeting the Basic Skills requirements by earning an eligible industry certification. See the Basic Skills Exemption List document for a list of eligible industry certifications (<http://www.fldoe.org/workforce/dwdframe/rtf/basic-skills.rtf>).

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 pursuant to Section 1008.29, F.S.; 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.)

## **Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's IEP or 504 plan or postsecondary student's accommodations plan 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 postsecondary service provider. 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.

In addition to accommodations, some secondary students with disabilities (ESE) will need modifications to meet their special needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note postsecondary curriculum cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular occupational completion point (OCP) or a modified occupational completion point (MOCP). If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly indicates that it is anticipated that the student may need an additional year to complete an OCP/MOCP. The student should work on different competencies and new applications of competencies each year toward completion of the OCP(s)/MOCP. After achieving the competencies identified for the year, the student earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number (for eligible students with disabilities).

### **Articulation**

This program has no statewide articulation agreement approved by the Articulation Coordinating Committee. However, this does not preclude the awarding of credits by any college through local agreements.

For details on statewide articulation agreements which correlate to programs and industry certifications, refer to [http://www.fldoe.org/workforce/dwdframe/artic\\_frame.asp](http://www.fldoe.org/workforce/dwdframe/artic_frame.asp).

### **Standards**

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

- 01.0 Demonstrate understanding of procedures.
- 02.0 Demonstrate understanding of operation and maintenance of mechanical systems and engines.
- 03.0 Demonstrate mathematics knowledge and skills.
- 04.0 Demonstrate science knowledge and skills
- 05.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas.
- 06.0 Operate pneumatic and crawler -type tractor with attachments.
- 07.0 Demonstrate language arts knowledge and skills
- 08.0 Solve problems using critical thinking skills, creativity and innovation.
- 09.0 Operate a back hoe.
- 10.0 Operate a motor grader.
- 11.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
- 12.0 Utilize utility construction equipment as applicable.
- 13.0 Use information technology tools
- 14.0 Describe the importance of professional ethics and legal responsibilities.

- 15.0 Demonstrate personal-- money-management concepts, procedures, and strategies
- 16.0 Operate a crane.
- 17.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment
- 18.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives
- 19.0 Explain the importance of employability and entrepreneurship skills

2011 – 2012

**Florida Department of Education  
Student Performance Standards**

**Program Title: Heavy Equipment Operation**  
**PSAV Number: I490202**

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

- 01.0 Demonstrate understanding of procedures--The student will be able to:
- 01.01 Apply safety practices during operation of heavy equipment.
  - 01.02 Discuss function of each piece of heavy equipment as appropriate.
  - 01.03 Turn and back-up equipment safely.
  - 01.04 Operate equipment on roadway safely.
- 02.0 Demonstrate understanding of operation and maintenance of mechanical systems and engines--The student will be able to:
- 02.01 Perform preventive maintenance on equipment including greasing, changing oil, and replacing filters.
  - 02.02 Perform additional maintenance based on specific equipment needs.
  - 02.03 Safety check equipment prior to operation.
- 03.0 Demonstrate mathematics knowledge and skills. -- The students will be able to: AF3.0
- 03.01 Demonstrate knowledge of arithmetic operations. AF3.2
  - 03.02 Analyze and apply data and measurements to solve problems and interpret documents. AF3.4
  - 03.03 Construct charts/tables/graphs using functions and data. AF3.5
- 04.0 Demonstrate science knowledge and skills. -- The students will be able to: AF4.0
- 04.01 Discuss the role of creativity in constructing scientific questions, methods and explanations. AF4.1
  - 04.02 Formulate scientifically investigable questions, construct investigations, collect and evaluate data, and develop scientific recommendations based on findings. AF4.3
- 05.0 Use oral and written communication skills in creating, expressing and interpreting information and ideas. -- The students will be able to:
- 05.01 Select and employ appropriate communication concepts and strategies to enhance oral and written communication in the workplace. CM 1.0
  - 05.02 Locate, organize and reference written information from various sources. CM 3.0
  - 05.03 Design, develop and deliver formal and informal presentations using appropriate media to engage and inform diverse audiences. CM 5.0
  - 05.04 Interpret verbal and nonverbal cues/behaviors that enhance communication. CM 6.0

- 05.05 Apply active listening skills to obtain and clarify information. CM 7.0
- 05.06 Develop and interpret tables and charts to support written and oral communications. CM 8.0
- 05.07 Exhibit public relations skills that aid in achieving customer satisfaction. CM 10.0

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

06.0 Operate pneumatic and crawler-type tractor with attachments--The student will be able to:

- 06.01 Move, level, and spread top soil.
- 06.02 Remove stumps.
- 06.03 Pile debris for burning.
- 06.04 Remove and replace dozer blade.
- 06.05 Remove and replace bucket.
- 06.06 Attach cutting teeth as needed.
- 06.07 Safely load dump trucks.

07.0 Demonstrate language arts knowledge and skills. -- The students will be able to: AF 2.0

- 07.01 Locate, comprehend and evaluate key elements of oral and written information. AF2.4
- 07.02 Draft, revise, and edit written documents using correct grammar, punctuation and vocabulary. AF2.5
- 07.03 Present information formally and informally for specific purposes and audiences. AF2.9

08.0 Solve problems using critical thinking skills, creativity and innovation. -- The students will be able to:

- 08.01 Employ critical thinking skills independently and in teams to solve problems and make decisions. PS1.0
- 08.02 Employ critical thinking and interpersonal skills to resolve conflicts. PS 2.0
- 08.03 Identify and document workplace performance goals and monitor progress toward those goals. PS 3.0
- 08.04 Conduct technical research to gather information necessary for decision-making. PS 4.0

**Course Number: TRA0087**  
**Off-road Equipment Operator (1 of 2) – 300 Hours – SOC Code 47-2073**

09.0 Operate back hoe--The student will be able to:

- 09.01 Dig pit to specified grade.
- 09.02 Observe for cables, pipes, and underground utilities.
- 09.03 Dig ditches for drainage and pipes.
- 09.04 Install bucket teeth to back hoe

10.0 Operate a motor grader--The student will be able to:

- 10.01 Grade to specific levels.
- 10.02 Apply use of grading stakes when operating motor grade.

- 10.03 Build a road-bed.
  - 10.04 Perform blue-top grade (finish).
  - 10.05 Change blade and scarifier teeth on motor grader.
- 11.0 Demonstrate the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance. -- The students will be able to:
- 11.01 Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments. SHE 1.0
  - 11.02 Explain emergency procedures to follow in response to workplace accidents.
  - 11.03 Create a disaster and/or emergency response plan. SHE 2.0

**Course Number: TRA0088****Occupational Completion Point: C****Off-road Equipment Operator (2 of 2) – 300 Hours – SOC Code 47-2073**

- 12.0 Utilize utility construction equipment as applicable--The student will be able to:
- 12.01 Operate scraper.
  - 12.02 Operate trencher.
  - 12.03 Operate tar kettle.
  - 12.04 Operate rollers.
  - 12.05 Operate concrete mixer.
- 13.0 Use information technology tools. -- The students will be able to:
- 13.01 Use personal information management (PIM) applications to increase workplace efficiency. IT 1.0
  - 13.02 Employ technological tools to expedite workflow including word processing, databases, reports, spreadsheets, multimedia presentations, electronic calendar, contacts, email, and internet applications. IT 2.0
  - 13.03 Employ computer operations applications to access, create, manage, integrate, and store information. IT 3.0
  - 13.04 Employ collaborative/groupware applications to facilitate group work. IT 4.0
- 14.0 Describe the importance of professional ethics and legal responsibilities. -- The students will be able to:
- 14.01 Evaluate and justify decisions based on ethical reasoning. ELR 1.0
  - 14.02 Evaluate alternative responses to workplace situations based on personal,
    - 14.02.1 professional, ethical, legal responsibilities, and employer policies.ELR1.1
  - 14.03 Identify and explain personal and long-term consequences of unethical or illegal behaviors in the workplace. ELR1.2
  - 14.04 Interpret and explain written organizational policies and procedures. ELR 2.0
- 15.0 Demonstrate personal money-management concepts, procedures, and strategies. -- The students will be able to:
- 15.01 Identify and describe the services and legal responsibilities of financial institutions. FL 2.0

- 15.02 Describe the effect of money management on personal and career goals. FL 3.0
- 15.03 Develop a personal budget and financial goals. FL3.1
- 15.04 Complete financial instruments for making deposits and withdrawals. FL3.2
- 15.05 Maintain financial records. FL3.3
- 15.06 Read and reconcile financial statements. FL3.4
- 15.07 Research, compare and contrast investment opportunities.

**Course Number: TRA0049****Occupational Completion Point: D****Crane Operator – 300 Hours – SOC Code 53-7021**16.0 Operate crane or alternative equipment(operating engineer)--The student will be able to:

- 16.01 Apply safety procedures.
- 16.02 Review "Construction Industry Manufactures Association" safety manuals.
- 16.03 Operate crane with drag bucket, clamshell, and hook. (Optional)
- 16.04 Load dump truck with crane. (Optional)
- 16.05 Operate alternative equipment

17.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. -- The students will be able to:

- 17.01 Describe the nature and types of business organizations. SY 1.0
- 17.02 Explain the effect of key organizational systems on performance and quality.
- 17.03 List and describe quality control systems and/or practices common to the workplace. SY 2.0
- 17.04 Explain the impact of the global economy on business organizations.

18.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. -- The students will be able to:

- 18.01 Employ leadership skills to accomplish organizational goals and objectives. LT1.0
- 18.02 Establish and maintain effective working relationships with others in order to accomplish objectives and tasks. LT3.0
- 18.03 Conduct and participate in meetings to accomplish work tasks. LT 4.0
- 18.04 Employ mentoring skills to inspire and teach others. LT 5.0

19.0 Explain the importance of employability and entrepreneurship skills. -- The students will be able to:

- 19.01 Identify and demonstrate positive work behaviors needed to be employable.ECD 1.0
- 19.02 Develop personal career plan that includes goals, objectives, and strategies.ECD 2.0
- 19.03 Examine licensing, certification, and industry credentialing requirements. ECD 3.0
- 19.04 Maintain a career portfolio to document knowledge, skills, and experience. ECD 5.0
- 19.05 Evaluate and compare employment opportunities that match career goals. ECD 6.0
- 19.06 Identify and exhibit traits for retaining employment. ECD 7.0
- 19.07 Identify opportunities and research requirements for career advancement. ECD 8.0
- 19.08 Research the benefits of ongoing professional development. ECD 9.0
- 19.09 Examine and describe entrepreneurship opportunities as a career planning option. ECD 10.0