



Great Oaks Heavy Equipment Operations and Engineering Essential Skills Profile

This profile provides an outline of the skills required for successful completion of this career program. Additional information is located on the Great Oaks website at <https://hs.greatoaks.com/future-students/essential-skills-for-high-school-programs> and selecting the corresponding career program.

Recommended WorkKeys® Scores for Heavy Equipment Operations and Engineering

Applied Mathematics – 4
Workplace Documents – 4
Graphic Literacy – 4

*Practice tests and more information at <https://jobseeker.ohiomeansjobs.monster.com/Assessments/Home.aspx>

Recommended Essential Skills to Successfully Complete the Program

Rating Key:	Low = Slightly Essential	Medium = Essential	High = Very Essential
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Key Vocational Factors		Rating
Visual Acuity	The ability to detect differences/details visually	High
Depth Perception	The ability to detect the physical distance/depth of objects in space and time	High
Oral Communication	The ability to express/explain ideas	Medium
Oral Expression	The ability to verbally explain and express self in an intelligible manner so others will understand	Medium
Written Communication	The ability to communicate in a written format and record information accurately	Medium
Physical Mobility/Strength	Extended standing, bending, stooping, working inside and outside, and working in muddy and rocky conditions, and working in equipment that bumps and shakes the driver	High
Eye-hand Coordination	The ability to use tools and mount machinery with 3 points of contact. Eye sight with depth perception at distance.	High
Auditory Acuity	The ability to detect differences in pitch and sound	Medium
Safety Understanding	Able to comprehend hazards of working with tools, materials, equipment, and environmental conditions; able to wear personal protective equipment suitable for task	High

Worker Trait Skills	Rating
Ability to get along with others	Medium
Ability to work independently, without close supervision	Medium
Ability to work toward work including tasks of minimal interest	Medium
Ability to follow and retain:	
Multistep oral instructions	High
Written instructions/technical manuals - multistep	High
Simple to complex diagram instructions	High

Visual models or demonstrated instructions	High
Ability to use tools of trade (man lift or personnel lift, forklifts, lifts, forklift or elevator accessories or supplies, cargo handling equipment, shovels, ladders, etc.)	High
Ability to use numerical data (count, measure, compute, etc.) in applied setting	High
Ability to discriminate between objects of similar:	
Size, size, shape, and spatial relationship	Medium
Ability to organize work process/follow defined procedures	High
Dexterity (fine finger)	Medium
Coordination (eye-hand-legs)	High
Able to sequence events or follow a sequence as necessary	High
Operation and Control: Controlling operations of equipment or systems	High
Coordination: Adjusting actions in relation to others' actions	High
Operation Monitoring: Watching gauges, dials, or other indicators to make sure machine is working properly	High

Applied Mathematics Skills * Recommended WorkKeys® Scores 4	
Understanding of numbers	Work with whole numbers and decimals. Convert fractions to decimals and/or convert from decimals to percentages.
Mathematical Calculations	Use one or two-step calculations to solve problems, decide what information, calculations or unit conversions to use to answer a problem
Solving problems with math	Solve problems that require mathematical operations with multiple units (e.g. 6 feet 4 inches or 4 hours 30 minutes), identify calculation mistakes
Workplace Documents Skills * Recommended WorkKeys® Scores 4	
Complexity	Straightforward with some longer sentences and may contain conditional situations
Information and detail	Mostly informative and can be several details
Vocabulary	Mostly common with some advanced words
Document type	Informational, instructional and policy-type documents
Graphic Literacy Skills * Recommended WorkKeys® Scores 4	
Using charts/graphs	Locate information in charts or graphs
Interpreting information	Compare two or more pieces of information, identify trends/patterns, make inference and identify graphics that accurately represents data

Additional Recommended Abilities

Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
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Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.
Multi-limb Coordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.

Knowledge Required in Heavy Equipment Operations and Engineering Field

Public Safety and Security	Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.
English Language	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
Customer and Personal Service	Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.

Additional Considerations

Must enjoy working with their hands, able to follow directions, and work independently	Must possess good communication skills
Must be aware of surroundings such as live electrical points, safety glasses, overhead dangers, safety harness requirements, and gas lines	Must be able to problem solve
Wear a uniform	Must be able to work in various climates: rain, snow, ice, inside, outside, heat, etc.
Must understand the hazards associated with the equipment and tools	Must not mind heights, using ladders, stooping, and bending.

Technology

Spreadsheet software	Office Suite software
Materials requirement's planning logistics and supply chain software	Inventory management software
Enterprise resource planning ERP software	Equipment maintenance software

Heavy Equipment Operations and Engineering Work Activities

Learn and follow safety regulations.	Take actions to avoid potential hazards or obstructions, such as utility lines, other equipment, other workers, or falling objects.
Inspect product load for accuracy and safely move it around the warehouse or facility to ensure timely and complete delivery.	Manually or mechanically load or unload materials from pallets, skids, platforms, cars, lifting devices, or other transport vehicles.
Position lifting devices under, over, or around loaded pallets, skids, or boxes and secure material or products for transport to designated areas.	Perform routine maintenance on vehicles or auxiliary equipment, such as cleaning, lubricating, recharging batteries, fueling, or replacing liquefied-gas tank
Weigh materials or products and record weight or other production data on tags or labels.	Operate or tend automatic stacking, loading, packaging, or cutting machines.
Signal workers to discharge, dump, or level materials.	Turn valves and open chutes to dump, spray, or release materials from dump cars or storage bins into hoppers.
Move controls to drive gasoline- or electric-powered trucks, cars, or tractors and transport materials between loading, processing, and storage area.	Take actions to avoid potential hazards or obstructions, such as utility lines, other equipment, other workers, or falling objects.
Hook tow trucks to trailer hitches and fasten attachments, such as graders, plows, rollers, or winch cables to tractors, using hitch pins.	Take actions to avoid potential hazards or obstructions, such as utility lines, other equipment, other workers, or falling objects.
Move levers or controls that operate lifting devices, such as forklifts, lift beams with swivel- hooks, hoists, or elevating platforms, to load, unload, transport, or stack material.	Locate underground services, such as pipes or wires, prior to beginning work.
Monitor operations to ensure that health and safety standards are met.	Adjust hand wheels and depress pedals to control attachments, such as blades, buckets, scrapers, or swing booms.
Start engines, move throttles, switches, or levers, or depress pedals to operate machines, such as bulldozers, trench excavators, road graders, or backhoes.	Coordinate machine actions with other activities, positioning or moving loads in response to hand or audio signals from crew members.
Load and move dirt, rocks, equipment, or other materials, using trucks, crawler tractors, power cranes, shovels, graders, or related equipment.	Drive and maneuver equipment equipped with blades in successive passes over working areas to remove topsoil, vegetation, or rocks or to distribute and level earth or terrain.
Check fuel supplies at sites to ensure adequate availability.	Keep records of material or equipment usage or problems encountered.

Certifications Students Can Earn

Credential	Ohio Graduation Points
NCCER Level 2 – Heavy Equipment Operations	12
NCCER Core	6
NCCER Level 1 – Heavy Equipment Operations	6
Forklift Operation	2
Aerial Work Platform (AWP) Operation	2
OSHA 10 – Construction	1
CPR/First Aid	1
Rough Terrain Forklift Operation	N/A
Skid Steer	N/A

Possible College Credits

College Credit Plus (CCP)	The CCP program provides Ohio high school students an opportunity to complete college courses and earn transcribed credit.
Career Technical Assurance Guides (CTAGs)	CTAGs award college credit for career-technical coursework to students who complete an approved course and earn a qualifying score on the end of course exam.
Articulated Credit	Some Great Oaks career-technical programs have agreements with colleges where student can earn credit toward a specific degree.

Please speak with your school counselor, Great Oaks counselor and/or career technical instructor to learn more about these potential opportunities.

Possible Career Pathways

Apprentice	Project Estimator
Site Engineer	Crane Operator
Truck Driver	Forklift Operator
Equipment Salesperson	Underground Utility Installer
Landscape	Materials Supply Worker