



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

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| Applied Mathematics-3 | Graphic Literacy-4 |
| Workplace Documents-3 | |

*Practice tests and more information at

<https://jobseeker.ohiomeansjobs.monster.com/Assessments/Home.aspx>

Essential Skills Needed to Successfully Complete the Program

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| Rating Key: | Low = Slightly Essential | Medium = Essential | High = Very Essential |
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| Key Vocational Factors | | Rating |
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| 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 | 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 |
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| 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 | | Medium |

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| 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 | Medium |
| 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 |

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| Reading Skills *See Recommended WorkKeys® Scores Above | |
| Math Skills *See Recommended WorkKeys® Scores Above | |
| Counting-Recording-Comparing-Calculating | Whole numbers and decimals |
| Calculating fractions, decimals, ratios, order of operations | Pre-Algebra and Geometry |
| Ratio, Algebra, formulas, square roots | Geometry |

Additional Abilities Required

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| Control Precision | The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions. |
| 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

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| 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

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| 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

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

Heavy Equipment Operations and Engineering Work Activities

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| 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 | Perform routine maintenance on vehicles or auxiliary equipment, such as cleaning, lubricating, |

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| material or products for transport to designated areas. | 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. |
| Align machines, cutterheads, or depth gauge makers with reference stakes and guidelines or ground or position equipment, following hand signals of other workers. | Operate tractors or bulldozers to perform such tasks as clearing land, mixing sludge, trimming backfills, or building roadways or parking lots. |
| Drive tractor-trailer trucks to move equipment from site to site. | Repair and maintain equipment, making emergency adjustments or assisting with major repairs as necessary. |
| Select and fasten bulldozer blades or other attachments to tractors, using hitches. | Talk to clients and study instructions, plans, or diagrams to establish work requirements. |

Available Certifications

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| Ohio Commercial Driver's License (12 points) | CPR/First Aid Certification (1 point) |
| OHSA 10-Construction Industry (1 point) | Rough Terrain Forklift Operations (1 point) |
| NCCER Core (6 points) | NCCER Level 2-HEO |
| NCCER Level 1-HEO (6 points) | |

Possible College Credits

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| College Credit Plus in English, Math, Social Studies, or Science | Must be preapproved. Must pass a college course at an Ohio college or College Credit Plus class at Great Oaks. |
| Articulated Credit | Great Oaks has agreements with certain colleges that may give you credits for a specific degree. Possible agreements are: <ul style="list-style-type: none"> • Hocking College (Heavy Equipment Management, up to 9 credit hours possible) • Ohio Valley ABC (Air Conditioning, Refrigeration and Heating Apprenticeship, 144 class hours, 2000 hours work experience, 2nd level) |
| Career Technical Credit Transfer | The Ohio Transfer to Degree Guarantee helps career and technical students transfer credits earned in high school to community college or four-year degree programs. The credit can be used at any Ohio public college or university: <ul style="list-style-type: none"> • If you successfully completed your career-technical program and passed certain required assessments. • If you attend a similar program at a public Ohio college or university. <p>For more information, go to www.transfercredit.ohio.gov</p> |

*Additional college or post-secondary education may be required in this field

Possible Career Pathways

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| Equipment Operator | Project Estimator |
| Site Engineer | Land Developer |