



Great Oaks Industrial Diesel Mechanics 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 Industrial Diesel Mechanics

Applied Mathematics – 4
Workplace Documents – 4
Graphic Literacy – 5

*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
Auditory Acuity	The ability to detect differences in pitch/sound	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	High
Physical Mobility/Strength	The ability to lift 70 pounds or more, bending, stooping, and standing for extended amount of times	High
Eye-Hand-Arm Coordination and Dexterity	The ability to use tools to ensure work is completed	High

Worker Trait Skills	Rating
Ability to get along with others	High
Ability to work independently, without close supervision	High
Ability to work toward work including tasks of minimal interest	High
Ability to stick to assigned task to a positive/expected conclusion	High
Ability to work accurately, recheck and correct work to industry standards	High
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 safely use tools of trade (specialty wrenches, portable data input terminals, engine or component test stands, calipers, boring machines, screwdrivers, pliers, etc.)	High

Ability to use numerical data (count, measure, compute, etc.) in applied setting	High
Ability to discriminate between objects of similar:	
Size	High
Shape	High
Color	High
Spatial Relationship	High
Dexterity-Fine and gross finger/motor	High
Ability to organize work process/follow defined procedures	High
Able to determine and/or follow a sequence of steps to a logical conclusion	High
Repairing: Repairing machines or systems using the needed tools	High
Troubleshooting: Determining causes of operating errors and deciding what to do about it	High
Operation and Control: Controlling operations of equipment or systems	High

Applied Mathematics Skills * Recommended WorkKeys® Scores 4	
Understanding of numbers	Work with whole numbers and decimals
Mathematical calculations	Solve problems that require one or two mathematical operations, calculate average or mean of a set of numbers, understand and use ratios, fractions and decimals, add and subtract fractions, multiply mixed numbers (12 1/8) by whole numbers
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 5	
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

Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects. Ability to lift 70 pounds
Near Vision	The ability to see details at close range (within a few feet of the observer).
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.

Knowledge Required in Industrial Diesel Mechanics

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.
Mechanical	Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
Transportation	Knowledge of principles and methods for moving people or goods by air, rail, sea, or road, including the relative costs and benefits.

Industrial Diesel Mechanics Activities

Inspect brake systems, steering mechanisms, wheel bearings, and other important parts to ensure that they are in proper operating condition.	Use hand tools such as screwdrivers, pliers, wrenches, pressure gauges, and precision instruments, as well as power tools such as pneumatic wrenches, lathes, welding equipment, and jacks and hoists.
Adjust and reline brakes, align wheels, tighten bolts and screws, and reassemble equipment.	Adjust and reline brakes, align wheels, tighten bolts and screws, and reassemble equipment.
Examine and adjust protective guards, loose bolts, and specified safety devices.	Raise trucks, buses, and heavy parts or equipment using hydraulic jacks or hoists.
Perform routine maintenance such as changing oil, checking batteries, and lubricating equipment and machinery.	Test drive trucks and buses to diagnose malfunctions or to ensure that they are working properly. Need three points of contact to get into vehicles.
Attach test instruments to equipment, and read dials and gauges to diagnose malfunctions.	Specialize in repairing and maintaining parts of the engine, such as fuel injection systems.
Rebuild gas or diesel engines.	Recondition and replace parts, pistons, bearings, gears, and valves.
Install or repair accessories.	Adjust or repair computer-controlled exhaust emissions devices.
Specialize in repairing and maintaining parts of the engine, such as fuel injection systems.	Record repairs and maintenance performed.
Inspect, test, and listen to defective equipment to diagnose malfunctions, using test instruments such as handheld computers, motor analyzers, chassis charts, and pressure gauges.	Inspect, repair, and maintain automotive and mechanical equipment and machinery such as pumps and compressors.
Study blueprints or manufacturers' manuals to determine correct installation or operation of machinery.	Inspect, repair, and maintain automotive and mechanical equipment and machinery such as pumps and compressors.
Align front ends and suspension systems.	Adjust or repair computer-controlled exhaust emissions devices.

Repair or adjust seats, doors, or windows.	Disassemble and overhaul internal combustion engines, pumps, generators, transmissions, clutches, and differential units.
Measure vehicle emissions to determine whether they are within acceptable limits.	Diagnose and repair vehicle heating and cooling systems.
Repair or maintain the operating condition of industrial production or processing machinery or equipment.	Operate valve-grinding machines to grind and reset valves.
Clean, lubricate, or adjust parts, equipment, or machinery.	Maintain or repair vehicles with alternative fuel systems, including biodiesel, hybrid, or compressed natural gas vehicles.
Analyze test results, machine error messages, or information obtained from operators to diagnose equipment problems.	Observe and test the operation of machinery or equipment to diagnose malfunctions, using voltmeters or other testing devices.

Additional Considerations

Must enjoy working with their hands, able to follow directions, and work independently	Must possess good communication skills
Must be able to learn new technology	Must be able to problem solve
Wear a uniform	Good vision and good hearing
Must understand the hazards associated with the equipment and tools	Must consider allergies to plants, pollen, fertilizers

Technology

Word Processing software	Spreadsheet software
Office Suite software	Facilities Management software
Database interface and query software	Specialty truck parts/equipment software

Certifications Students Can Earn

Credential	Ohio Graduation Points
ASE T4 – Brakes	12
ASE Student – Medium/Heavy Truck Brakes	4
ASE Student – Medium/Heavy Truck Diesel Engines	4
ASE Student – Medium/Heavy Truck Electrical/Electronic Systems	4
ASE Student – Steering and Suspension	4
ASE Student – Medium/Heavy Truck Inspection Maintenance & Repair	4
Snap-On Multimeter Certification	3
Snap-On Battery, Starting and Charging Station Certification	3
Forklift Operation	2
OSHA 10 – General Industry	1
CPR/First Aid Certification	1

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

Mechanic	Equipment Salesperson
Service Writer/Manager	Transportation Supervisor
Industrial Maintenance Technician	Alternative Fuel Vehicle Technician