

HEAVY EQUIPMENT OPERATOR: Level One

22101-05 Orientation to the Trade (5 Hours)

Provides a comprehensive overview of heavy equipment uses, operator responsibilities, career opportunities, and safety principles associated with the operation of heavy equipment.

22102-05 Heavy Equipment Safety (10 Hours)

Contains the safety guidelines for the operation, maintenance, and transportation of heavy equipment. Covers the use of signs and barricades and the safety of those working in the vicinity of heavy equipment, as well as trenching safety issues.

22103-05 Identification of Heavy Equipment (5 Hours)

Provides an overview of each type of heavy equipment covered in the program, along with their different models, applications, and common attachments.

22104-05 Basic Operational Techniques (25 Hours)

Provides basic instruction for the safe operation and preventive maintenance on each type of equipment, including proper mounting, startup procedures, and basic movements of the machine and its attachments. Provides the first hands-on experience with each type of machine.

22105-05 Tractors (17.5 Hours)

Covers operation of utility tractors and heavy-duty articulated tractors as used in the construction industry. Contains detailed operation and operator maintenance instructions, including duties and responsibilities of the operator, safety rules for operation, attachment of implements, and preventive maintenance procedures performed by the operator.

22106-05 Grades, Part One (15 Hours)

Introduces the concepts of elevations and grading, the use and interpretation of grade stakes, and the basic process of grading construction sites, distance measuring, and finish grades.

HEAVY EQUIPMENT OPERATOR: Level Two

22201-06 Introduction to Earth Moving (12.5 Hours)

Summarizes the earthmoving process, including the heavy equipment operator's role in ensuring an efficient and profitable operation. Explains the use of dozers, scrapers, loaders, excavators, and trucks in the earth moving process.

22202-06 Dump Trucks (22.5 Hours)

Covers detailed operation of on-road and off-road dump trucks used in the construction industry. Describes the duties and responsibilities of operators, safety rules, and operator preventive maintenance duties.

22203-06 Rollers (15 Hours)

Covers operation of the various machines used to compact soil, as well as soil classifications and compaction. Describes the duties and responsibilities of operators, safety rules, and operator preventive maintenance duties.

22204-06 Scrapers (17.5 Hours)

Describes the duties and responsibilities of operators, as well as safety rules, and operator preventive maintenance duties. Covers scraper techniques and emphasizes scraper safety.

22205-06 Loaders (17.5 Hours)

Covers the various uses of wheel and track loaders, as well as operator maintenance, loader safety, and operating procedures. Contains procedures for using the loader in loading, grading, excavation, and demolition work.

22206-06 Forklifts (17.5 Hours)

Covers the different types of forklifts and their applications on construction sites. Includes instructions for lifting, transporting, and placing various types of loads. Describes the duties and responsibilities of operators, as well as safety rules, and operator preventive maintenance duties.

22207-06 Excavation Math (25 Hours)

Covers formulas and methods used to compute cut and fill requirement on a job, and illustrates techniques used to quickly estimate excavations. Provides a brief overview of software used to compute excavation requirements.

22208-06 Grades Part Two (20 Hours)

Uses information presented in previous modules to teach proper methods for setting grades, interpreting grade stakes, and reading site plans to ensure that earthmoving work meets specifications.

22209-06 Civil Blueprint Reading (20 Hours)

Explains how to read site plans to obtain cut and fill information. Identifies safety and legal issues that are of concern for heavy equipment operators such as underground utilities and property lines.

HEAVY EQUIPMENT OPERATOR: Level Three

22301-06 Introductory Skills for the Crew Leader (16 Hours)

Covers basic project planning and scheduling techniques as well as coordination and communication of work assignments to heavy equipment operators and other trades and crafts. Also describes project setup and materials purchasing requirements.

22302-06 Dozers (30 Hours)

Covers the uses, attachments, operating controls, maintenance requirements, transporting procedures, and operating methods for dozers, emphasizing safe operation of the equipment. Teaches dozing operations, including clearing land, backfilling, and stockpiling. Explains the use of common attachments, including winches, rippers, specialty blades, and pulled attachments.

22303-6 Backhoes (30 Hours)

Describes backhoes and their applications, attachments, operating controls, preventive maintenance requirements, and basic operating techniques, emphasizing safe operation of the equipment. Covers trenching, loading, demolition, backfilling, laying pipe, and excavating foundations. Also covers roading and transporting the backhoe.

22304-6 Excavators (40 Hours)

Presents information on use, safe operations, and maintenance of hydraulic excavators, including standard and telescoping excavators. Teaches basic operation of equipment and application of knowledge in performing earthwork activities, such as ditching, grading, placing riprap, and slope finishing. Describes safety issues and preventive maintenance activities.

22305-6 Motor Graders (40 Hours)

Introduces concepts and procedures involved in the operation of motor graders. Teaches basic daily preventive maintenance, safety checking, and control of the machine. Covers main attachments used with motor graders, and the use of motor graders in performing ditching, grading, ripping, and scarifying operations.

22306-06 Advanced Operational Techniques (20 Hours)

Presents advanced topics for equipment operators, including safety, controlling and working around water, calculating operating costs, and laying pipe. Discusses safety meetings, reporting, inspections, investigations, and hazardous material requirements. Describes the use, calibration, and maintenance of laser instruments.

22307-06 Finishing and Grading (20 Hours)

Describes the use of various types of heavy equipment to finish and trim grades and slopes of roads, pads, ditches, and other structures; specifications used for grading; and procedures for checking the final grade. Presents soil stabilization methods and the proper use of geotextile materials for erosion control.

22308-06 Soils (7.5 Hours)

Describes soil classification systems. Explains how shrink and swell factors affect equipment selection. Discusses how soil conditions affect equipment performance. Explains techniques for working with various soil types.