

**Associated Builders and Contractors, Inc. – Central Ohio Chapter  
Heavy Equipment Operator – NCCER Contren Learning Series**

**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 Finish Operator (25 Hours)**

Contains information about the responsibilities of the finish operator. Discusses leadership abilities in relation to organizing and directing workers and operators, and how to understand and interpret production requirements and specifications. Also explains how to set up and adjust leveling instruments.

**22302 Advanced Safety (17.5 Hours)**

Teaches advanced safety techniques and requirements for heavy equipment operators. Emphasizes organizing and conducting safety meetings. Discusses OSHA hazardous material requirements and safe operation of equipment. Describes safety reporting, inspections, and investigations.

**22303 Telescoping Excavators (20 Hours)**

Presents information on the operation and maintenance of telescoping excavators. Teaches basic operation of equipment and application of knowledge in performing earthwork activities, such as ditching, placing riprap, and slope finishing. Describes safety issues and preventive maintenance activities.

**22304 Motor Graders (25 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 rough grading, ripping, and scarifying operations.

**22305 Excavators (25 Hours)**

Presents the use, safe operation, and maintenance of excavators. Describes various operating techniques. Explains and demonstrates the use of excavators in ditching, grading, and slope-finishing operations.

**22306 Finish 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.

**22307 Soils, Part Three (17.5 Hours)**

Addresses problems associated with bridged areas and breakthroughs, as well as soil stabilization. Presents the proper use of geotextile materials. Reviews soil compaction requirements, and specific procedures for running moisture-density tests. Describes methods for fixing compaction problems.