

# HEAVY EQUIPMENT OPERATION & REPAIR

ENGINEERING, MANUFACTURING AND INDUSTRIAL TECHNOLOGY



## Course Overview:

**Program Location:** AIS Construction Equipment Company (shuttle available)

**Sessions Offered:** AM/PM

**Average Lecture Days/Week:** 2-3 Days

**Average Lab Days/Week:** 2-3 Days

**Academic Rigor:** 4 out of 5

**Homework:** None

**Required Reading:** Workbooks

## Course Description

This program provides students with an orientation to the heavy equipment industry, including heavy equipment safety, equipment maintenance, and basic operation techniques. This is a unique opportunity to be trained at AIS Construction Equipment Corporation. AIS is one of the premier heavy equipment sales and services dealers in Michigan. Tasks and skills learned include diesel engine diagnostics and repair, basic electricity and electronics, fundamentals of hydraulic components and cylinders, heavy equipment powertrains, disassembling and reassembling transmissions, and axle assemblies.

All students will be exposed to the operation of heavy equipment, including excavators, bulldozers, front-end loaders, backhoes, and forklifts, as it relates to underground construction, including grades, below-grade construction, and earth moving. Students can attend this program for two years. If college-level work is attained, students may earn up to five Lansing Community College (LCC) credits by exam.

## Student Leadership Opportunities

Students have the opportunity for leadership, competition and community service through membership in SkillsUSA.

## Success Indicators

- Mechanically inclined with strong hand/eye coordination
- Detail-oriented, focused, and good at troubleshooting
- Able to read and understand service manuals
- Strong communication skills

## Learning outcomes include, but are not limited to:

- Safety precautions in heavy equipment repair and operation
- Basic tool identification, shop principles, procedures, and maintenance
- Ability to select appropriate hand and power tools to perform automotive repairs
- Demonstrate safe use of battery jumper cables on battery terminals or remote jump points
- Operate the oor jack and position safety stands to allow safe vehicle servicing
- Diesel engine operation, troubleshooting, disassembly and assembly
- Basic electrical and electronic systems in heavy equipment machinery
- Heavy equipment powertrain identification and operation, hydraulic principles, operation and repair
- Identify and perform a safety inspection on all types of construction equipment
- Name and explain the use of attachments for various pieces of construction equipment

## Available Certifications:

- CPR/First AID
- National Center for Construction Education and Research (entry level certification) in heavy equipment safety, basic safety, orientation to the trade, identification of heavy equipment, and basic operational techniques

Updated 12/2025

FOR MORE INFO:  
CONTACT YOUR COUNSELOR,  
CALL 517.483.1596, OR  
VISIT [EATONRESA.ORG/CPC](http://EATONRESA.ORG/CPC)



# HEAVY EQUIPMENT OPERATION & REPAIR



## PROFESSIONAL CAREERS

- Accounts Payable
- Branch Manager
- Company Owner
- Fleet Operations Manager
- Instructor
- Machine Sales Person
- Parts & Attachment Sales Person
- Project Management/Manager

## TECHNICAL CAREERS

- Diesel Engine Technician
- Fleet Service Technician
- Heavy Equipment Operator
- Field Service Technician
- Foreman
- Paint & Decal Technician
- Parts, Sales & Service Representative
- Shop Service Technician

## ENTRY-LEVEL CAREERS

- 1st Year Technician
- Fork Truck Operator
- Grade Checker
- Heavy Equipment Laborer
- Material Handler
- Parts & Attachment Delivery Driver
- Registered Heavy Equipment Operator Apprentice
- Shipping and Receiving

ACADEMICS

PROFESSIONAL SKILLS

EXPERIENCES

PASSION

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