

**Heavy Equipment & Transportation Technology  
Technical Course Sequence and Description  
For**

**Equipment & Technology Institute**  
A High School Program Model

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## Introduction

The course descriptions and sequences that follow are to be used as a guide for those groups who are starting a secondary school-to-career program in Heavy Equipment and Transportation Technology. Local needs and state educational requirement may effect the extent of what will or can be included. The intent of this curriculum is to prepare students to continue their education at a post-secondary technical school or enter the workforce as an entry-level service technician.

The sequence combines a fully credited high school technical curriculum with a sequence of college credit bearing technical courses that compliment those at the high school. Each student upon graduation will receive the traditional credit for vocational courses taken at high school as well as approximately one year of college credit. Depending on state and local criteria some of these college and or high school courses will carry dual credit.

The AED Foundation has a list of textbooks and curriculum outlines for these courses. To get a copy's of these please contacts us at (630) 574-0650 or send an e-mail to [fpgiannelli@aednet.org](mailto:fpgiannelli@aednet.org).

This document is the culmination of three years of research and development conducted by the AED Foundation, Gage Park High School, the Chicago Public School's Department of Vocation Education, the Illinois State Board of Education/Department of Secondary Education, Universal Technical Institute, and Chicago's Daley College.

## Heavy Equipment And Transportation Technology

**Occupations:** Heavy Equipment Service Technician  
 Industrial Equipment Service Technician  
 Diesel Technician  
 Equipment Technician  
 Field Service Technician  
 Parts Specialist  
 Warranty Claims Writer

<b>High School Course Listing</b>	<b>Grade</b>	<b>Credit Upon Completion</b>
Introduction to Technology	9 <sup>th</sup>	1.0
Heavy Equip. & Trans. Tech I	10 <sup>th</sup>	1.0
Drafting Orientation	10 <sup>th</sup>	1.0
Heavy Equip. & Trans. Tech II	11 <sup>th</sup>	1.0
Heavy Equip. & Trans. Tech III	12 <sup>th</sup>	1.0

<b>*College Course Listing</b>	<b>Grade</b>	<b>Credit Upon Completion</b>
Introduction to Micro Computers/ Microsoft Office Suite	10 <sup>th</sup>	.5
Blue Print Reading	10 <sup>th</sup>	.5
Introduction to Machining I&II	10 <sup>th</sup>	.5
Introduction to Microsoft Excel	11 <sup>th</sup>	.5
Principles of Mechanism	11 <sup>th</sup>	.5
Industrial Electricity	11 <sup>th</sup>	.5
Advanced Electronics	12 <sup>th</sup>	.5
Fluid Power Systems	12 <sup>th</sup>	.5
Programmable Logic Controllers	12 <sup>th</sup>	.5

\*These courses are offered to the students in the program and are taken during summer break and during the school year on Saturdays, evenings or to upper classman during the school day.

## **High School Technical Course Descriptions**

### **INTRODUCTION TO TECHNOLOGY**

**Grade 10      1 Year      1 Credit**

This is an orientation level course, which provides a wide variety of experiences with the tools, processes and materials of the industrial community. Topics covered included: the fundamental principles of industrial equipment technology, its technical aspects and functions, the developmental stages of manufacturing, construction, communication, transportation and biotechnology production systems, industrial equipment technology's positive and negative implications for human life. Throughout this course, vocational skills are integrated with transitional skills and employability skills.

### **HEAVY EQUIPMENT AND TRANSPORT TECHNOLOGY I**

**Grade 10      1 Year      1 Credit**

This course provides overviews of the four major disciplines, (Electricity, Hydraulics, Engines/Fuel Systems and Transmission of power), of Heavy Equipment and Transport Technology. Topics included are the fundamental principles of the above as well as the basic safety skills needed to work with the tools and materials associated with this type of equipment. Throughout this course, vocational skills are integrated with transitional skills and employability skills.

### **DRAFTING ORIENTATION**

**Grade 10      1 Year      1 Credit**

This orientation level course introduces the student to the graphic language of technical drawing. It provides an overview of the fields of mechanical drafting. Students are provided experiences with orthographic projection, pictorial drawings, and exposure to computer-assisted drafting CAD. Students who complete the course will be able to: understand the nature and purpose of drafting; use basic drafting instruments; perform mathematical computations dealing with drafting; draw freehand sketches; develop freehand lettering skills; construct simple graphic figures; layout and draw one, two and three view orthographic drawings. They will also be able to: utilizing sectional views as necessary; layout and draw isometric, cabinet, oblique or perspective pictorial drawings; utilize standard dimensions along with adjusting tolerance to the extent needed for each application; use the computer as a drafting tool to draw and edit lines, arcs, and circles; investigate occupational opportunities in technical drafting and allied technical trades. Throughout this course, vocational skills are integrated with transitional skills and employability skills.

**HEAVY EQUIPMENT AND TRANSPORTATION TECHNOLOGY II**  
**ELECTRONIC CONTROL AND FLUID POWER SYSTEMS**

**Grade 11      1 Year      1 Credit**

This skill level course provides students with the opportunity to build upon the knowledge and skills acquired in the orientation and introductory courses as well as the College curriculum. This course provides a laboratory study of electricity/electronics and fluid power systems as it relates to heavy equipment and transportation technology. Students who complete this course will be able to: perform hydraulic maintenance checks, including flushing systems, preventing leaks and protecting against overheating as well as to diagnose and repair hydraulic system problems. Students will demonstrate the mastery of capacitance, inductance, and AC/DC voltage as they disassemble, reassemble, diagnose and repair electric motors and multiple-load and complex circuits. They will use precision mechanical and electronic measuring devices to perform these tasks. Throughout this course, vocational skills are integrated with transitional skills and employability skills.

**HEAVY EQUIPMENT AND TRANSPORTATION TECHNOLOGY III**  
**ENGINES AND TRANSMISSION OF POWER**

**Grade 12      1 Year      1Credit**

This course provides students with the opportunity to build upon the knowledge and skills acquired in the preceding courses at the High School and the College. This course provides a laboratory study of engines and power transmissions as it relates to heavy equipment and transportation technology. Students who complete this course will be able to disassemble, reassemble, diagnose and repair gas and diesel engines. They will also be able to disassemble, reassemble, diagnose and repair manual and hydrostatic transmissions including the usage of precision mechanical and electronic measuring devices. Throughout this course, vocational skills are integrated with transitional skills and employability skills.