

WELDING



First year students are instructed in the basics of gas welding and arc welding processes. Students are prepared to set up and pass a qualification test according to the American Welding Society. Students in the first year will also receive a basic introduction to machining. Second year students will learn advanced arc welding, which prepares them for welding pipe and passing a qualification test using shielded metal arc welding. Students will also learn gas tungsten arc welding as well as an introduction to blueprint reading for welders and metallurgy. In addition, students in the second year will learn basic CNC setup and CNC programming. Welding is taught through lectures and hands on experiences. Common sense and safety are important qualities for students interested in welding. If college level work is attained, student may earn up to 13 LCC credits in year one, and 12 LCC credits in year two.

Program Location:

LCC West Campus

Session Offered: AM/PM

(2nd year students – PM only)

Average Lecture Days/Week: 0-1 day

Average Lab Days/Week: 4-5 days

Homework: Rarely

Required reading:

College level textbooks

Less than 25 pages/week

LCC Credits Available: 13 (year one)

12 (year two)

(If college level work is attained)

Student learning outcomes include but are not limited to:

- Oxygen and acetylene use and safety factors
- Evaluating the likenesses and differences between oxidizing, neutral, can carburizing flames
- Troubleshooting welding equipment malfunctions
- Understanding and using various welding terms and descriptions
- Understanding the steel designation system
- Fundamentals of alternating current and direct current as well as the application and principles of polarity
- Determine the correct amperage and voltage used and the variables of amperage for different material thickness
- Basic knowledge in gas metal arc welding and flux cored arc welding
- Understanding the major transfers of wire, including short circuit, spray, globular and pulsed
- Discussing position groove welds, both open root and closed root (with backer plates)
- Describing traditional and non-traditional manufacturing processes
- Creating a basic CNC program
- Operating CNC machines

HIGH SCHOOL/COLLEGE CREDIT

The primary focus of the Eaton Intermediate School District Career Preparation Center is to enhance a student's high school curriculum by providing an opportunity to learn a technical trade and/or to obtain a head start on a post-secondary education.

All students completing an Eaton Intermediate School District's Career Center program at Lansing Community College **have the opportunity** to earn either direct or articulated college credit while completing their high school program if specific criteria are met.

LCC credit is awarded to a student who: a) completes the high school career and technical education course with a minimum of a "C" average; b) meets the performance objectives for a specific Lansing Community College course; and, c) passes the college course final examinations, if one is required. These credits are shown as numerical grades on the student's LCC transcript. Transcripts may be requested through Lansing Community College Enrollment Services Department by August following course completion.

The courses listed below show the possible LCC college credits that may be available to high school students taking an EISD Career Preparation Program.

WELDING

YEAR ONE

WELD 102 Industrial/Construction Safety 2 LCC Credits
This course covers safety in the industrial workplace and on construction worksites. Included are local, state and federal safety regulations. The focus will be on the prevention of accidents but will teach the correct response if an accident should occur. First aid, CPR/AED certificates will be required for successful completion.

WELD 103 Combination Welding 4 LCC Credits
This is a beginning theory and practice course which will introduce the safe operations and applications of oxyacetylene welding, torch cutting, plasma cutting, brazing and shielded metal arc welding. Practice will consist of these methods of joining steel in the horizontal, flat and vertical positions. Destructive testing will also be provided.

WELD 110 Gas Metal ARC Welding 4 LCC Credits
Provides technical understanding and applications of gas metal arc welding and flux cored arc welding. Fundamentals, safety, equipment adjustments, metal transfers and shielding gases will be covered. Develops manual skill in all positions on different thicknesses and types of metals, including mild steel, aluminum and stainless steel.

METM 100 Manufacturing Processes 3 LCC Credits
This course provides students with a comprehensive study of the materials, concepts, and processes used in modern manufacturing which is augmented by field trips to local manufacturing plants. This course is designed for those who are pursuing careers in manufacturing design, engineering, and supervision.

YEAR TWO

WELD 105 Advanced ARC Welding 4 LCC Credits
Students will develop the skills necessary to produce quality multiple pass fillet and groove welds on steel plates. Conventional and low hydrogen electrodes are used in preparation of passing performance tests in all positions. Destructive testing methods, weld profiles and welding symbols as related to arc welding are introduced

WELD 111 Gas Tungsten ARC Welding 4 LCC Credits
Students will develop the skills, principles and applications of gas tungsten arc welding. Welds will be done on different thickness of ferrous and non-ferrous metals in all positions. Proper material cleaning, fit up and safety are also introduced.

METM 110 Introduction to Precision Machining 4 LCC Credits
This course introduces machine tool principles and practices used in industry. Topics include safety, terminology, measurement, manual milling, manual lathe, drilling, basic CNC setup and CNC programming. A working knowledge of hand and machine tools is achieved through a series of lectures, demonstrations, and hands-on projects.

For additional information concerning this program, go to: <http://www.lcc.edu/catalog/syllabus/>
Choose to search: by "Keyword" - Type in : e.i.s.d - then select current year