

FREE EVENT

**SPONSORED BY:
TAACCCT Grant**

WELDING RECRUITMENT EXPO

WHEN

Friday, May 1st
11am – 1pm

WHERE

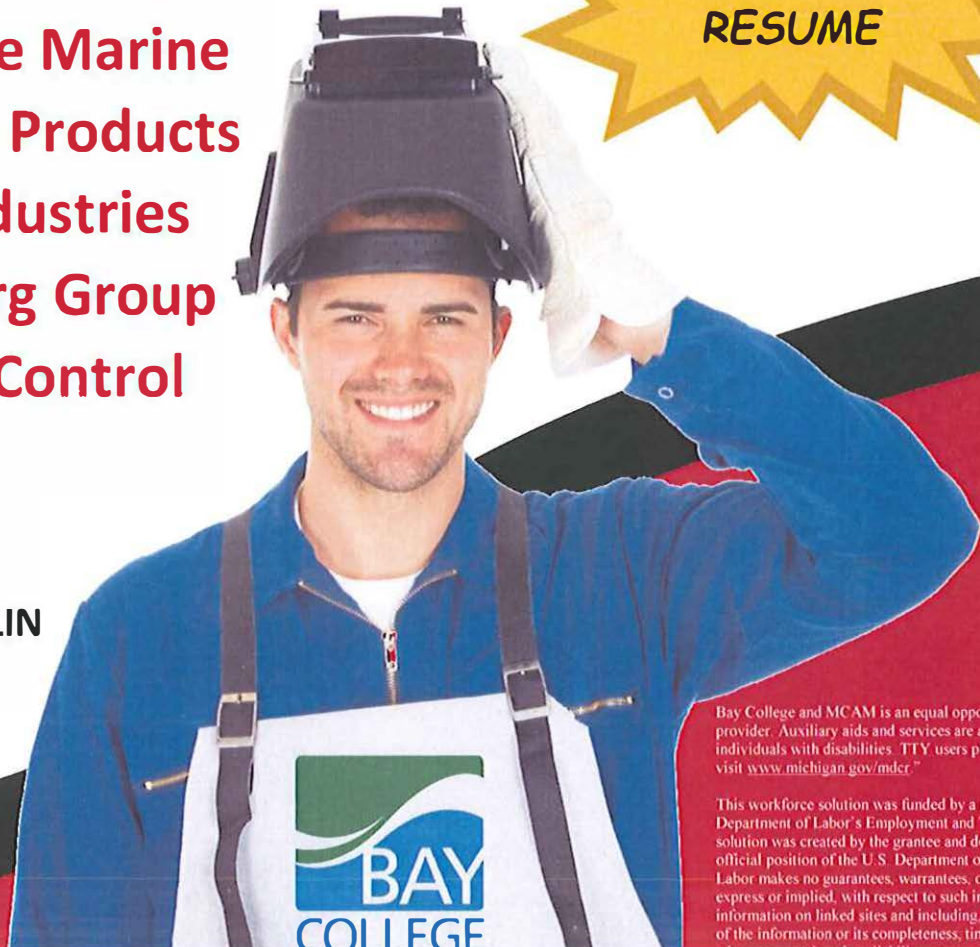
M-TEC at Bay College
ROOM #2017

COMPANIES REPRESENTED

- **Bay Metal Works**
- **Marinette Marine**
- **Tyco Fire Products**
- **Silvan Industries**
- **Oldenburg Group**
- **Systems Control**

**BRING YOUR
RESUME**

**QUESTIONS?
PLEASE CONTACT
MELISSA VANBROCKLIN
(906) 217-4106**



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Mechatronics Certificate

Mechatronics is a relatively new term used to describe how computers control electrical and mechanical systems. Mechatronics is present in any automated system, from HVAC (Heating, Ventilating and Air Conditioning) systems to robotic assembly lines. The Mechatronics certificate is designed to provide an introduction to principles and basic skills used in a wide variety of fields. Students will learn the principles needed to install, maintain, and repair mechanical, electrical, control, and fluid power systems.

Program Requirements

(24 Credits, 26 Contact Hours)

Credit/Contact

ELEC-130	Circuit Fundamentals I	4/4
ELEC-145	Basic Process Control	4/4
ELEC-180	Electrical Machinery and Controls	4/4
ELEC-285	Fluid Power	4/4
ELEC-290	Introduction to Programmable Logic Controllers	4/4
TECH-100	Basic Machine Tool Operation	4/6



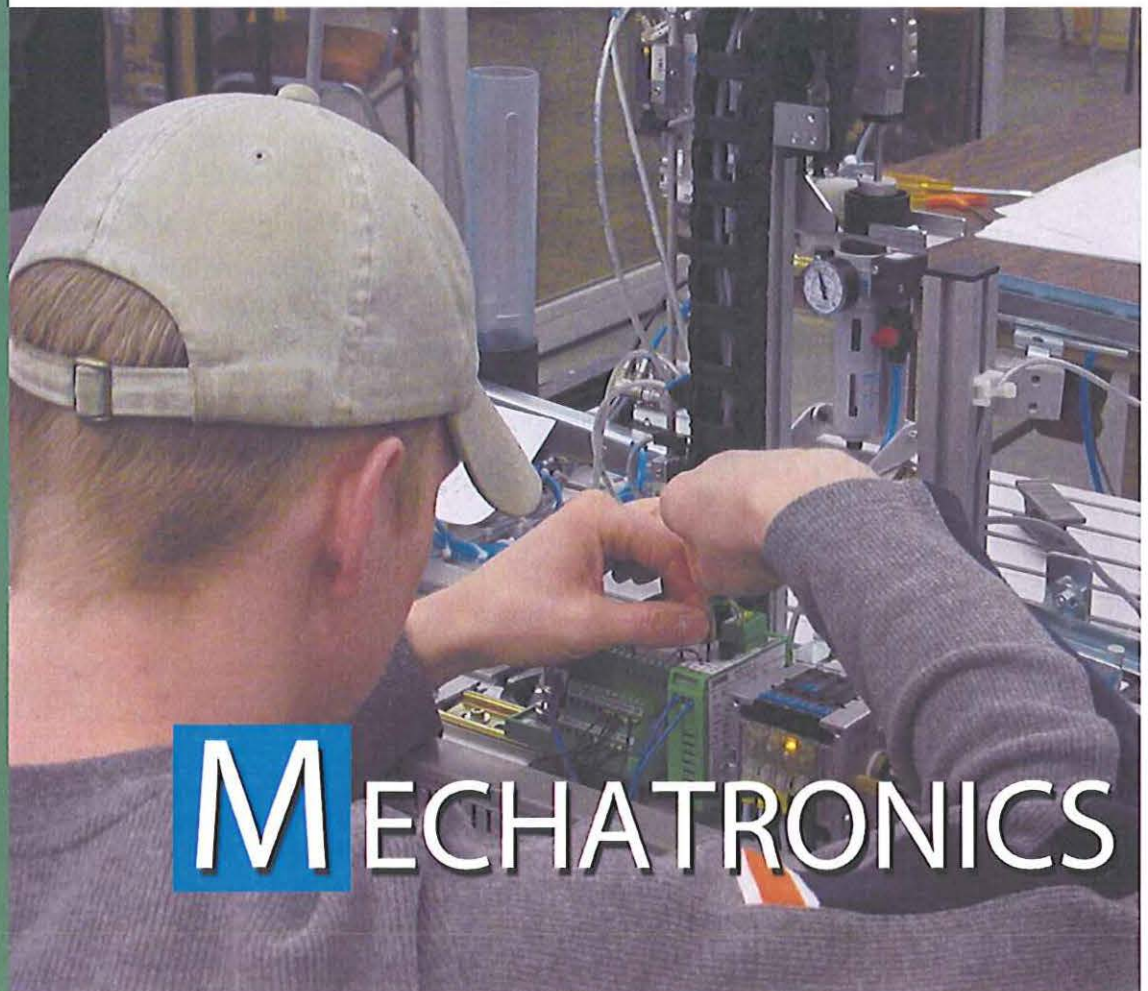
Office of Admissions
2001 North Lincoln Road
Escanaba, MI 49829
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2801 N US 2
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M ECHATRONICS

COURSE INFORMATION

ELEC-130

Circuit Fundamentals I

This course is designed as an introduction to electrical and electronic concepts. Course topics included are: DC and AC circuit concepts: voltage, charge, current, energy, and power; fundamental circuit laws; characteristics of resistance, capacitance and inductance; basic magnetic concepts and circuits; basic transformer principles. Electrical safety and test equipment usage are taught and practiced.

Credit Hrs: 4.00 Contact Hrs: 4.00

ELEC-145

Basic Process Control

An introductory course in the operation, calibration, and application of electrical, pneumatic, and hydraulic process systems. Process variable systems include: temperature, pressure, level, flow, analytical and micro-processing systems.

Credit Hrs: 4.00 Contact Hrs: 4.00

ELEC-180

Electrical Machinery & Controls

A study of the characteristics and operating principles of Direct and Alternating Current Machinery and Equipment. Also covered are control circuits, maintenance, and trouble analysis. Prerequisite:

ELEC-130. Credit Hrs: 4.00 Contact Hrs: 4.00

ELEC-285

Fluid Power

A study of the principles and applications relating to Hydraulics and Pneumatics used in industrial equipment applications. The course will cover symbology used in fluid power, flow, and pressure relationships, and hydraulic circuitry. This course is designated as a basic introductory course for both electrical and non-electrical majors. Credit Hrs: 4.00 Contact Hrs: 4.00

ELEC-290

Introduction to

Programmable Logic Controllers

An introduction to industrial computer applications for hardware control of manufacturing equipment. Students will learn the concepts and principles of Programmable Logic Controllers, including timed events, counting control, sequencing control, and input/output control. Credit Hrs: 4.00 Contact Hrs: 4.00

TECH-100

Machine Tool Operation

This lecture/laboratory course emphasizes machine shop procedures and safety practices. Introduction to the basic operation of the engine lathe, milling machine, surface grinder, and drill press will be covered. The use and care of precision measuring tools will be undertaken. Coordinate measuring machine will be introduced. Credit Hrs: 4.00 Contact Hrs: 6.00

For more information about our graduation rates, the median debt of students who completed the program, and other important information, please visit <http://www.baycollege.edu/gainfulemployment>. Bay College / MCAM is an equal opportunity employer/program provider. Auxiliary aids and services are available upon request to individuals with disabilities. TTY users please call 1-877-878-8464 or visit www.michigan.gov/mdcr.

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Welding Certificate

This Certificate Program provides the student with technical skills and classroom/shop experiences concerned with all types of metal welding, brazing, and flame cutting.

Skills learned in this program are applicable to construction welding, ship building, fitting, and industrial and production welding.

Program Requirements

(33 Credits, 45 Contact Hours)

		Credit/Contact
MATH-102	Introduction to Technical Math	4/4
TECH -100	Basic Machine Tool Operation	4/6
TECH -101	Blueprint Reading	2/3
TECH -105	Materials of Industry	4/4
WELD-110	Introduction to Oxygen – Fuel Welding & Cutting	3/4
WELD-120	Arc Welding	4/6
WELD-210	Advanced Arc Welding	4/6
WELD-220	Gas Metal Arc Welding (MIG)	4/6
WELD-260	Gas Tungsten Arc Welding (TIG)	4/6

NOTE: The following classes are not part of the certificate program, but may be offered on an as needed basis. These classes are offered for those who are interested in pursuing a career in the pipe welding field.

WELD-240	Basic Pipe Welding	4/6
WELD-280	Advanced Pipe Welding	4/6

Students are required to purchase safety glasses, gloves, cutting goggles, leather boots, helmet, striker, pliers, tip cleaners, and to wear overalls or denim type clothing.



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COURSE INFORMATION

MATH 102

Introduction to Technical Math

Topics include basic algebra formula usage, signed numbers, practical measurements, metrics and conversions, relative error, basic geometry, and right triangle trigonometry. This course is designed to meet occupational program requirements or as a preparation for MATH-106 for those needing more advanced mathematics. Scientific/graphing calculator. Prerequisite: MATH-085 with a "C" or better or appropriate score on the mathematics placement test.

Credit Hrs: 4.00 Contact Hrs: 4.00

TECH 100

Basic Machine Tool Operation

This lecture/laboratory course emphasizes machine shop procedures and safety practices. Introduction to the basic operation of the engine lathe, milling machine, surface grinder, and drill press will be covered. The use and care of precision measuring tools will be undertaken. Coordinate measuring machine will be introduced.

Credit Hrs: 4.00 Contact Hrs: 6.00

TECH 101

Blueprint Reading

A study of mechanical part representation, technical nomenclature, standard symbology, and accepted practices for machine and welding drawings. Emphasis is placed on correct drawing interpretation. Technical sketches, lay-out templates, and patterns are created for shop use.

Credit Hrs: 2.00 Contact Hrs: 3.00

TECH 105

Materials of Industry

The objective of this course is to provide a generalized system of classification of materials and their industrial uses. This course is a supportive course designed to meet occupational program requirements. Scientific calculator is required.

Credit Hrs: 4.00 Contact Hrs: 4.00

WELD 110

Oxygen Fuel Welding and Cutting

This lecture/laboratory course presents the underlying principles used in application of oxygen fuel, torch cutting, or brazing. Students also receive basic instruction in oxygen-acetylene welding of cast iron.

Credit Hrs: 3.00 Contact Hrs: 4.00

WELD 120

Arc Welding

This course is designed for students wishing a basic understanding of electric arc welding theory and applications. Emphasis is placed on manual techniques of shielded metal arc welding and oxy fuel cutting.

Credit Hrs: 4.00 Contact Hrs: 6.00

WELD 210

Advanced Arc Welding

In this course students will learn skills including air carbon arc cutting, plasma arc cutting, use of the CNC burning table, and automatic torch cutting. At the end of this course students will take a welding test in an attempt to become certified welders, according to the AWS D1.1 Structural Steel Welding code. Prerequisite: WELD-120.

Credit Hrs: 4.00 Contact Hrs: 6.00

WELD 220

Gas Metal Arc Welding MIG

This course is designed to give the student the basic theory and application of semi-automatic wire-feed welding. Emphasis is placed on Short Arc, Flux Cored Arc, Spray Arc, and Self-Shielded Arc processes.

Credit Hrs: 4.00 Contact Hrs: 6.00

WELD 240

Basic Pipe Welding

This skill course is designed specifically for those students wishing to challenge the American Welding Society Certification test on structural and/or pipe welding. Prerequisite: WELD-210 or permission of instructor.

Credit Hrs: 4.00 Contact Hrs: 6.00

WELD 260

Gas Tungsten Arc Welding TIG

The student will learn to produce welds safely with high frequency, gas tungsten arc welding equipment. Welding safety, gas tungsten arc welding fundamentals, equipment adjustments, current changes, polarity changes, and shielding gases will be stressed. Emphasis will be placed on the steel, aluminum, and stainless steel welding process. Prerequisite: None; however previous welding experience recommended.

Credit Hrs: 4.00 Contact Hrs: 6.00

WELD 280

Advanced Pipe Welding

The student will learn to produce welds on pipe and tubing to comply with the A.S.M.E., Section IX, of the Boiler and Pressure Vessel Code. Welding safety, polarity changes, current adjustments, and shielding gases will be stressed. Emphasis will be on root and fill pass welding using gas tungsten arc and shielded metal arc welding processes. Prerequisite: WELD-240 or equivalent.

Credit Hrs: 4.00 Contact Hrs: 6.00

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