

# INDUSTRIAL MANUFACTURING TECHNOLOGY (IMT)

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## IMT 1000 – AutoCAD Basics

**Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Introduces students to the fundamentals of AutoCAD while preparing them for drawing in MasterCAM. This course will cover the fundamentals of 2D drawing in addition to providing an introduction to 3D wireframe drawings, Geometric Dimensioning and Tolerancing (GD&T).

**Offered:** Fall.

## IMT 1010 – Mechanical and Electrical Print Reading

**Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Covers reading, sketching and interpreting work drawings. Symbolism, conventional practices and standards used in the drafting area are studied. Concentration will be in the machine part drawings. This course is not part of any engineering degree.

**Offered:** Spring.

## IMT 1020 – Manufacturing Concepts

**Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Introduces the student to the manufacturing environment. Students gain basic skills required by modern manufacturers in areas of community, mathematics, teaming, safety, workplace readiness, quality, continuous improvement and understanding of some manufacturing processes. This course matches requirements for the West Central Ohio Manufacturing Consortium's Basic Certification.

**Offered:** Fall.

## IMT 1021 – Manufacturing Principles

**Credit Hours: 4.00 Total Contact Hours: 8.00 Lab Hours: 8.00**

Introduce the student to the manufacturing environment. Students gain basic skills required by modern manufacturers in areas of mathematics, teaming, safety, workplace readiness, quality, continuous improvement, understanding of some manufacturing processes and gains maintenance awareness. Students are required to successfully complete and will earn the nationally recognized credential Manufacturing Skills Standard Council (MSSC).

**Offered:** Spring.

## IMT 1190 – Tool and Die Technology

**Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Introduces the fundamentals of tool and die technology as it relates to the manufacturing industry. Covers the various types of dies, and machining processes required to make dies and the impact of lean manufacturing on die selection.

**Offered:** Fall.

## IMT 1195 – Tool and Die Troubleshooting

**Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Introduces the fundamentals of troubleshooting and problem solving as it relates to tool and die technology. Covers basic nomenclature, terminology, classification of problems related to manufactured parts, repair techniques and maintenance of new/existing tools in the manufacturing industry.

**Offered:** Spring.

## IMT 1330 – Plant Layout and Equipment

**Credit Hours: 2.00 Total Contact Hours: 2.00 Lecture Hours: 2.00**

Covers blueprint reading and simplified drawings related to the fabrication and installation of hoists, catwalks, platforms, machinery foundations, exhaust systems, heat treat furnaces, helical and continuous washers. Practice in making simple plant layouts.

**Offered:** Fall.

## IMT 1911 – Technical Math I

**Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Provides the first in a two course math sequence, which emphasizes the practical application of mathematics to a variety of industries such as: business, technical, trade and/or allied health programs. This course concentrates on providing the essential algebra and geometry needed in technical and trade programs.

**Offered:** Fall.

## IMT 1921 – Technical Math II

**Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Provides the second, in a two course math sequence, which emphasizes the practical application of mathematics to the needs of people in skilled trades. The course concentrates on topics out of algebra, complex numbers, trigonometry, and vectors and phasors.

**Offered:** Spring

**Prerequisites:** IMT 1911.

## IMT 2080 – Introduction to Electricity

**Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Provides an overview of direct current and alternating current electricity, magnetism and applications. Topics include: atomic structure of matter, static electricity, Ohm's Law, series and parallel circuits, power, magnetism and electromagnetism, generation of EMF, inductance, capacitance, reactance, resonance, generators, motors, transformers and measuring instruments.

**Offered:** Fall.

## IMT 2170 – Industrial Motor Drives

**Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Provides a hands-on introduction to industrial servo motors including the various power supplies, speed control systems and feedback systems. Students will construct servo control circuits using schematic diagrams to install and troubleshoot the completed circuit.

**Offered:** Spring.

## IMT 2260 – Industrial Electronic Controls

**Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Introduces the fundamental concept of industrial electronic control circuits. Topics include: introduction to control electronics, control system components, signal conditioning and power control, motor and controls, closed-loop control, programmable logic controllers, power distribution effects, and safety automation.

**Offered:** Fall.

**IMT 2400 – Introduction to Fluid Power****Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Provides a broad overview of basic fluid power uses in the manufacturing environment. Topics include hydraulic and pneumatic energy, force & pressure, basic system components, and system flow rates. Laboratory experiences involve troubleshooting basic circuits.

**Offered:** Spring.**IMT 2710 – Fundamentals of Refrigeration****Credit Hours: 2.00 Total Contact Hours: 2.00 Lecture Hours: 2.00**

Introduces the fundamentals of refrigeration to prospective refrigeration or air conditioning operators or heating and cooling servicepersons.

Topics covered: refrigeration systems and cycles, refrigerants, compressors, condensers, evaporators, metering and control devices, electric motors and controls, basic servicing and use of tools, equipment and instruments.

**Offered:** Fall.**IMT 2740 – Advanced Refrigeration and HVAC****Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00**

Explains cooling systems used in commercial, institutional and industrial applications. Types of equipment include reciprocating and centrifugal chillers, absorption systems, cooling towers, fans and air handlers. Topics include psychometrics, pressure-enthalpy diagrams and commercial load calculation. This course is a continuation of IMT 2710.

**Offered:** Fall**Prerequisites:** IMT 2710.**IMT 2750 – Wastewater Treatment and Operation****Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Provides an overview of the treatment of municipal wastewater, and is designed to assist in the preparation of the State of Ohio Class I Wastewater Operator exam. The course will emphasize wastewater treatment processes and equipment, as well as an understanding of sewer systems and laboratory processes. The wastewater treatment theory and the math involved in taking the state exam will be emphasized.

**Offered:** Fall.**IMT 2810 – Millwright Tools and Equipment****Credit Hours: 2.00 Total Contact Hours: 3.00 Lecture Hours: 1.00 Lab Hours: 2.00**

Introduces students to foundation for study of manufacturing methods, processes, related equipment, and tools for industry. Requires students to understand shop safety practices, job planning, feeds and speeds, layout tools and procedures, hand tool and bench work, metal cutting saws, drilling machines, lathes, milling machines, jig bore and jig grinder EDM abrasives.

**Offered:** Fall.**IMT 2820 – Mechanical Power Transmission Systems****Credit Hours: 2.00 Total Contact Hours: 2.00 Lecture Hours: 2.00**

Covers installation and maintenance of mechanical power transmission systems. Topics include: belts, pulleys, shafts, couplings, bearing, speed reducers and chains used in the modern factory by the millwright.

**Offered:** Fall.**IMT 2850 – Power Plant Equipment****Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00**

Covers the fundamentals of power plant equipment, operation and maintenance designed for operators of small and large power plants and building engineers. Topics include: boilers, combustion, fuels and firing, steam engines and turbines, auxiliary (pumps, heat exchangers, compressed air systems, building heating systems, and water treatment systems), accessories (feed water regulation, fans and blowers, control systems), refrigeration and air conditioning systems, and basic power plant operation.

**Offered:** Fall.**IMT 2910 – Physics for Apprentices****Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Covers applied mechanical physics. Selected topics include vector forces, momentum, constant acceleration, trajectories, friction, concepts of simple machines, rotary motion, work, power, energy, torque, simple harmonic motion, waves and sound, solid and fluid properties, heat and thermodynamics and kinetic theory of gases.

**Offered:** Fall**Prerequisites:** IMT 1911 or equivalent.