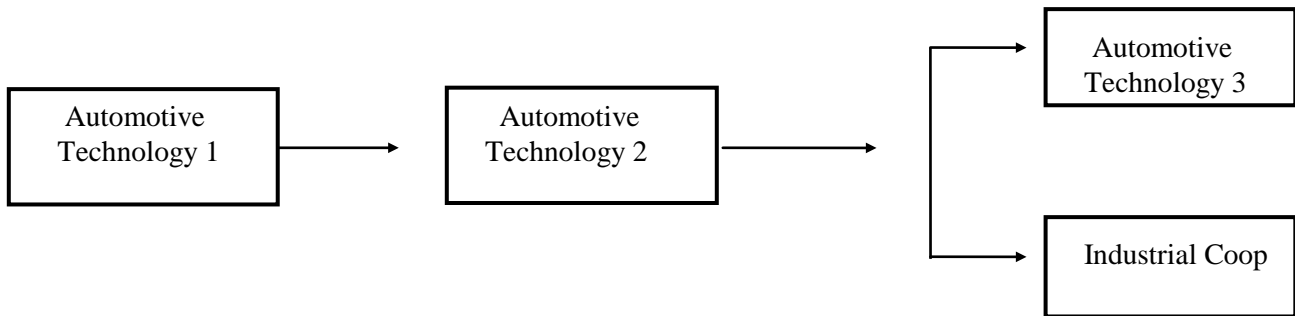


INDUSTRIAL TECHNOLOGY

INDUSTRIAL - TECHNICAL EDUCATION SUGGESTED SEQUENCE

AUTOMOTIVE



AUTO TECHNOLOGY 1

1.0 credit, grades 10-12

The purpose of this course is to provide exploratory experiences related to the automobile, its engines and its components. Content will include these instructional units: basic shop practices, preventive maintenance, gasoline and diesel engines, brake systems and principles of automotive tune-ups. Content is general, but comprehensive enough to provide a basic background for those students who wish to pursue auto mechanics as an occupation. Future scheduling for Vocational Auto Technology 2 and 3 is an important consideration upon enrollment. **Advance Placement Credit is available through Ferris State University with successful completion (B or better) of Auto Technology 1.**

AUTO TECHNOLOGY 2

1.0 credit, grades 10-12

Prerequisite: Auto Technology 1. This is an advanced course that builds upon the basic Auto Technology 1 course. This course stresses practical job related experiences with each student working on a number of real automobiles. In addition, content will include instructional units on: front end and steering systems, power transmissions, rear axles and principles of front wheel drive operation and engine electrical components (starting, charging and ignition systems). After successfully completing the course, basic skills learned will prepare the student for industry entry level positions.

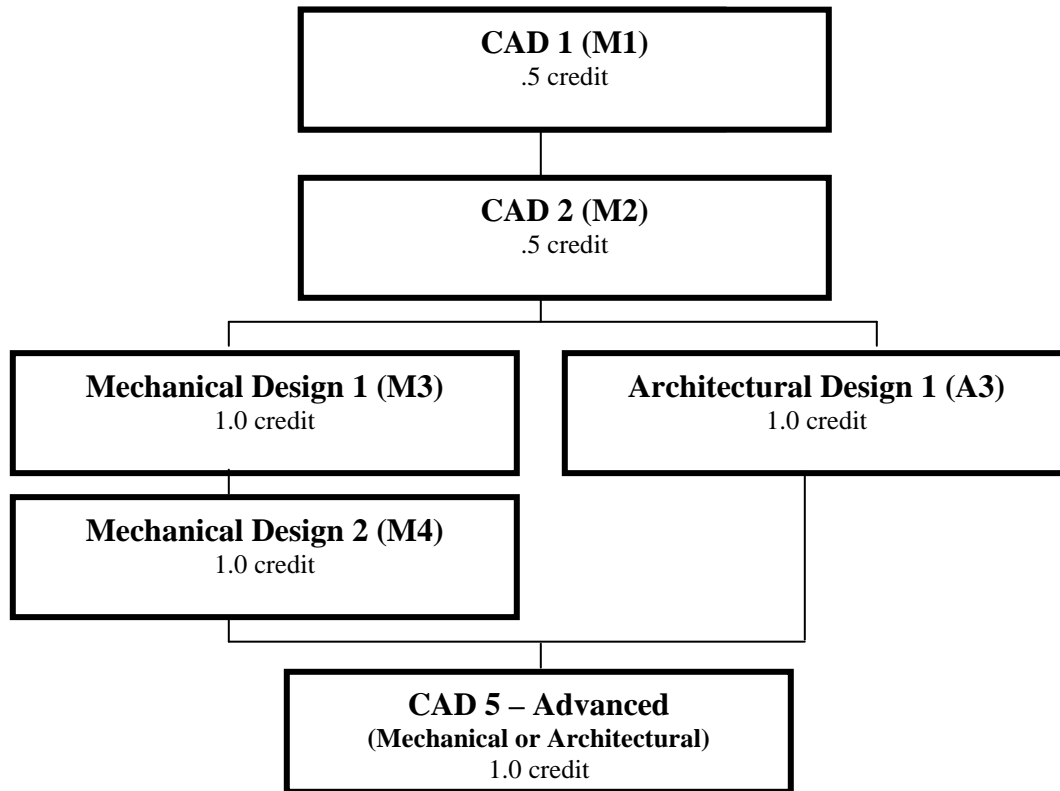
AUTO TECHNOLOGY 3

1.0 credit, grades 11-12

Prerequisite: Auto Technology 2. This advanced course builds upon fundamental repair operations learned in Auto Technology 1 and 2. This course stresses on-vehicle problem diagnosis and repair operations. In addition, content will include the following instructional units: chassis electrical accessory circuits, automatic transmission theory of operation and assembly, emission control systems, air conditioning theory and system service. Successful completion of this course permits entry into auto mechanics occupations. **Advance Placement Credit is available through Ferris State University with successful completion (B or better) of Auto Technology 2 and Auto Technology 3.**

INDUSTRIAL TECHNOLOGY CO-OP (See page 76 for course description.)

CAD/DESIGN TECHNOLOGY



CAD 1 – Beginning (M1)

0.5 credit, grades 9-12 (Satisfies 0.5 elective computer credit)

This course is offered to students who have had little or no experience with AutoCAD or drafting. Students will explore Computer Aided Drafting techniques through the application of 2-D design concepts focused in mechanical design and residential architecture. Upon satisfactory completion of this course, students will be able to produce and read simple engineering and architectural drawings and will be prepared for CAD 2. **Advance Placement Credit is available through Baker College with successful completion (B or better) of CAD 1.**

CAD 2 – Intermediate (M2)

0.5 credit, grades 9-12

Prerequisite: CAD 1 – Beginning (M1). This course is offered to students who want to further their knowledge and skill of computer aided drafting and design that were acquired in CAD 1. In this course, students will learn more challenging 2-D drafting and design concepts using AutoCAD software and they will be introduced to 3-D design concepts using a 3-D solid modeling software. This course will focus on both mechanical and residential architecture design concepts. Upon satisfactory completion of this second course in CAD/Design program, the student will be prepared for success in the next design courses. **Advance Placement Credit is available through Baker College and Oakland Community College with successful completion (B or better) of CAD 2.**

MECHANICAL DESIGN 1 – (M3)

1.0 credit, grades 10-12

Prerequisite: CAD 2 – Intermediate (M2). This course is offered to students who would like to combine the skills that were acquired in CAD 1 and CAD 2 with new engineering and design problem solving skills to build machines that are intended to demonstrate specific applications related to math, science, and physics. Students will participate in a variety of projects in which they will design, document, build, and test their machines. Students will also have the opportunity to participate in the Oakland County Competitive Robotics Association (OCCRA) where they will design, document, and build a robot that will compete against other schools in Oakland County. Students may also become members of the Michigan Industrial and Technology Education Society (MITES) and enter their work into the yearly student project competition.

MECHANICAL DESIGN 2 – (M4)

1.0 credit, grades 11-12

Prerequisite: Mechanical Design 1 (M3). This course is offered to students who would like to combine all of the skills that were acquired in previous CAD/Design program courses with new software techniques to produce and test working machines that are intended to demonstrate specific applications related to math, science, and physics. New software techniques include: photorealistic rendering, stress analysis, and dynamic simulations. Students will also have the opportunity to participate in the Oakland County Competitive Robotics Association (OCCRA) where they will design, document, and build a robot that will compete against robots from other schools in Oakland County. Students may also become members of the Michigan Industrial & Technology Education Society (MITES) and enter their work into the yearly student project competition.

ARCHITECTURAL DESIGN 1 – (A3)

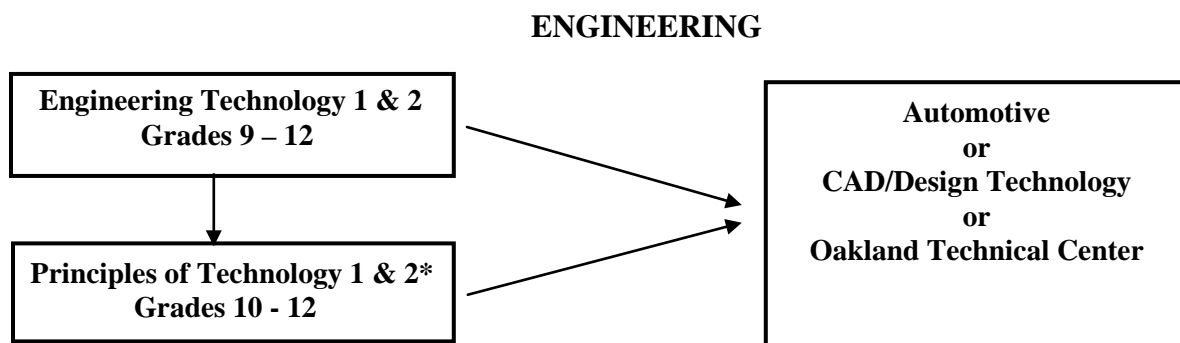
1.0 credit, grades 10-12

Prerequisite: CAD 2 (M2). This course is offered to students who would like to further the architectural design skills acquired in CAD 1 and CAD 2. The students will use AutoCAD (for 2D) and other 3D architectural modeling software to study residential construction. Subjects for this course include site location, cost estimation, design (interior and exterior) considerations, and building codes. This course will equip the student with the skills that will allow them to produce a complete drawing package which includes a site plan, floor plan, foundation plan, elevations, building details, and photorealistic renderings. Students may also become members of the Michigan Industrial and Technology Education Society (MITES) and enter their work into the yearly student project competition. **Advance Placement Credit is available through Baker College and Oakland Community College with successful completion (B or better) of Architectural Design 1.**

COMPUTER AIDED DRAFTING (CAD-5) - ADVANCED (MECHANICAL OR ARCHITECTURAL)

1.0 credit, grade 12

Prerequisite: Architectural Design (A3) or Mechanical Design 2 (M4). This course is offered to students who would like to combine all of the skills acquired in the previous CAD/Design courses and apply them to real world situations. The student will have a choice to either complete a mechanical design project or an architectural design project. After choosing a project type, the student will be required to completely design and document a project of their own (with instructor's approval) or a project given to them by the instructor. Students may also have the opportunity to participate in the Oakland County Competitive Robotics Association (OCCRA) where they will design, document, and build a robot that will compete against robots from other schools in Oakland County. Students may also become members of the Michigan Industrial & Technology Education Society (MITES) and enter their work into the yearly student project competition.



* Students may earn 0.5 science credit in either Principles of Technology 1 or Principles of Technology 2 but not both.

ENGINEERING TECHNOLOGY 1

0.5 credit, grades 9-12

This course is specifically designed for students interested in pursuing careers in the engineering and technical fields. It emphasizes the relationship between principles taught in general math, science and social studies courses and practical application. Students will be introduced to basic concepts of energy conversion, electrical/electronics, pneumatics and hydraulics through classroom discussions, demonstrations, media presentations and guest speakers. In addition, students will be able to reinforce their learning by constructing and dismantling related experiments in a laboratory setting.

ENGINEERING TECHNOLOGY 2

0.5 credit, grades 9-12

Prerequisite: Engineering Technology I. This course builds upon the fundamental concepts studied in Engineering Technology I. It provides students with an in-depth understanding of electronics and fluid power through laboratory related experiences. Course activities will enable the student to apply a variety of learned skills through the conception, design, fabrication and testing of a technology project.

PRINCIPLES OF TECHNOLOGY 1

1.0 credit, grades 10-12

This course is an integrated package of competency based test materials, hands-on laboratory activities, video programs, and mathematics skill labs. Course content emphasizes physics formulas in the workplace. Instructional units include the study of the principles of force, work, and rate while working on experiments and projects involving electricity, fluids, mechanical and thermal systems. Completion of this course provides the student with the necessary background to better understand the purpose of advanced math and science courses and prepare for working with technology in technical occupations. Enrollment for Principles of Technology II course is an important consideration upon enrollment.

PRINCIPLES OF TECHNOLOGY 2

1.0 credit, grades 10-12

Prerequisite: Principles of Technology I. This course builds on the Principles of Technology I course and includes the additional units involving resistance, energy, power, and force transformers. Students will work with modern technical equipment to perform experiments and develop skills in practical problem solving. This course will stress the underlining mathematical and scientific principles behind technology. Upon completion of this course, students will be prepared to study technical fields with the necessary skills and understandings needed to assure success.

INDEPENDENT STUDY FOR INDUSTRIAL TECHNOLOGY

0.5 credit, grades 11-12

Prerequisite: Application. This course is designed for the student in grades 11 and 12 who desires a more intensive study in a particular discipline than the general curriculum provides. Before the term begins, each student must submit a work-study plan for the entire semester signed by his/her parent/guardian. Upon approval, copies will be held by the student, the teacher and their counselor. Weekly student-teacher conferences will be arranged to monitor the student's progress. The final project(s) may be evaluated by the entire department and a panel of industry representatives before a grade is approved.