

# GI-TEC Program Guide

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2019-2020 School Year



**Gratiot-Isabella Technical Education Center**

[www.gi-tec.com](http://www.gi-tec.com)

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Mt. Pleasant Campus, 1155 S. Elizabeth St., Mt. Pleasant, MI 48858

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## **Gratiot-Isabella Technical Education Center**

**\*2020 GI-TEC Open House: February 6<sup>th</sup> 5:30-7:30 on the Mt. Pleasant Campus- NTHS Induction Ceremony to Follow  
Please join us and see over 20 programs in action!**

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## **Accounting/Finance**

Accounting is a career-oriented course designed for students who plan to enter any area of business after graduation or attend college. This curriculum is project based with an emphasis on problem-solving. Topics covered include the accounting cycles of service organizations and merchandisers focusing on the recording of business transactions and the preparation of financial statements. Advanced topics include corporate accounting, managerial accounting, cost accounting, tax accounting, and auditing. Students participate in a number of team building activities, such as auditing and simulating real work experience. Completion of this course will prepare students for job entry and/or articulated course credits at several Michigan colleges.

### **COURSE CONTENT**

Introduction to Accounting & Financial Reporting  
Cost-Volume-Profit Analysis  
Accounting Information System  
Accounting for Sales and Inventory  
Time Value of Money  
Accounting for Fixed Assets  
Accounting for Long-term Liabilities and Equity  
Financial Statements  
Applied Academics  
Career Development (Employability, Teamwork, Leadership, Entrepreneurship)  
Business and Financial Management  
Technology and Safety

### **SPECIAL CLASS FEATURES**

Real-world clients  
Opportunity to participate in Business Professionals of America  
Co-op opportunities available  
Job shadow opportunities available  
Senior math credit  
Opportunity to earn College credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Problem-solving  
Basic Accounting  
Payables/Receivables  
Organization  
Communication

# **AgriScience**

AgriScience prepares students for a wide variety of careers in agriculture and animal science. Specific areas of study include Plant/Soil Science, Veterinary Science, Agricultural Business Management, Farm Mechanics, Leadership in Agriculture, and Greenhouse/Landscape Management. Class work is supplemented by hands-on experience in on-site laboratories and greenhouses, as well as, field trips to area farms and businesses.

## **COURSE CONTENT**

Scientific and Social Implications  
Leadership, Business Education & Career Success  
Organization of Living Systems  
Animal Industries and Domestic Animal Production  
Comparative Animal Systems and Animal Genetics  
Animal Health and Nutrition  
Plant Physiology  
Plant Nutrition  
Pests and Pest Management  
Soils  
Environmental and Energy Systems  
Natural Resources Fundamentals

## **SPECIAL CLASS FEATURES**

Opportunity to participate in Future Farmers of America (FFA)  
Real-world experience  
Co-op opportunities available  
Visual/Performing/Applied Arts Credit  
Senior math credit

## **EMPLOYMENT SKILLS FOR THE FUTURE**

Self-directed participation  
Leadership and Teamwork  
Critical thinking and problem-solving

# **Automotive Technology**

The Auto program follows the curriculum defined by the National Automotive Technician's Education Foundation (NATEF). The following areas are covered in the two-year program (two areas per year): Steering and Suspension, Engine service, Engine Performance, HVAC (2018-2019). Brakes, Electrical, Manual and Automatic Transmission (2019-2020).

The steering and suspension portion of the curriculum covers steering systems. Skill development will focus on steering, suspension, and four wheel alignment. Skill development in the brakes segment area will focus on drum, disc, hydraulic, power assist, and anti-lock brake systems. In the electrical component of the program, students will learn fundamentals and applications in automotive electrical, electronics, voltage, current, resistance, series and parallel circuits, magnetism, application of Ohm's Law, and wiring diagrams. Lighting systems, instruments, warning devices, horn, and other accessory circuits using wiring diagrams are covered, as well as skills in diagnosis, adjustment and repair of accessory and convenience circuits. The service area lab, used by the students, is equipped with up-to-date tools and equipment. This lab provides a real world setting where students practice technical skills used in an automotive repair facility.

## **COURSE CONTENT**

- General Electrical Systems and Theory and Operation
- Battery Diagnosis and Service
- Starting and Charging Systems Diagnosis and Repair
- Lighting Systems and Horn and Wiper/Washer Diagnosis and Repair
- Gauges, Warning Devices Diagnosis and Repair
- Accessories Diagnosis and Repair
- General Brake Systems Diagnosis and Hydraulic Systems Diagnosis and Repair
- Drum and Disc Brake Diagnosis and Repair
- Power Assist Units Diagnosis and Repair
- Employability Skills and Industrial Safety
- Miscellaneous (Wheel Bearing, Parking Brakes, Electrical, etc.) diagnosis and Repair
- Electronic Brake, Traction and Stability Control Systems Diagnosis and Repair

## **SPECIAL CLASS FEATURES**

- Preparation to take the ASE Student Certification test
- Real-world automotive service lab
- Co-op opportunities available
- Job shadow opportunities available
- Opportunity to earn College credit

## **EMPLOYMENT SKILLS FOR THE FUTURE**

- Problem-solving and Critical Thinking
- Teamwork
- Basic auto repair strategies

# **Business Management and Administration**

Business Management and Administration (BMA) is an advanced level business course that focuses on the opportunities and challenges of managing a business in the free enterprise system. This curriculum is project based with an emphasis on teamwork, problem-solving and communications. BMA will also focus on management theory, human resource management and behavior, finance, purchasing, logistics, and production. A team of students creates a student company. The student company allows team members to become shareholders, gain leadership skills, become project managers, and to share in risk-taking, decision-making, problem solving, accounting, production, human resources, marketing, and other experiences that take place in operating a successful business. A career in BMA encompasses planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations. Opportunities to participate in service projects will be emphasized. Completion of this course will prepare students for job entry and/or articulated course credits at several Michigan colleges.

## **COURSE CONTENT**

- International Business
- Information Technology and Application
- Data Management and Administration
- Business Planning and Entrepreneurship
- Human Resources / Personnel Administration
- Operations and Quality Management
- Financial Analysis and Economics
- Communications
- Business Management and Leadership
- Law, Ethics, and Government Regulations
- Project Management
- Career and Professional Development

## **SPECIAL CLASS FEATURES**

- Opportunity to participate in Business Professionals of America (BPA)
- Real-world business development
- Co-op opportunities available
- Job shadow opportunities available
- Senior math credit
- Visual/Performing/Applied Arts Credit
- Opportunity to earn College credit

## **EMPLOYMENT SKILLS FOR THE FUTURE**

- Problem-solving
- Leadership
- Organization
- Communication
- Teamwork

## **Construction Trades**

The Construction Trades course provides students a hands-on experience in the residential construction field. It will focus on the following areas: safety, tool use, methods of construction, foundation layout, wall and floor framing, roofing, stair construction, insulation, drywall, trim work, siding, door and window installation, shingling, and deck building. This class will address codes and inspections, blueprint reading, masonry, and other areas of construction. The hands-on building of the GI-TEC school house project gives students the skills to become employable in the construction field and/or continue in post-secondary education.

### **COURSE CONTENT**

Construction Materials  
Construction Tools and Equipment  
Building Construction Design – blueprint, etc.  
Site preparation and infrastructure  
Common construction practices—concepts flooring, foundation, etc.  
Residential Construction Techniques (Carpentry)  
Green Technology Construction Techniques  
Safety, Health, and Environmental  
Industry Overview  
Employability and Technology Skills  
Heavy Equipment/Civil Construction Techniques  
Construction Business Management

### **SPECIAL CLASS FEATURES**

Knowledge of various construction careers  
Carpentry  
Masonry  
Electrical Wiring  
Plumbing  
HVAC  
Co-op opportunities available  
Job shadow opportunities available  
Senior math credit  
Visual/Performing/Applied Arts Credit  
Opportunity to earn College credit  
Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

### **EMPLOYABILITY SKILLS FOR THE FUTURE**

Teamwork  
Problem-Solving/Troubleshooting  
Critical Thinking  
Blueprint reading  
Basic construction techniques

# Cosmetology

The Cosmetology program provides high school students with the training, classroom knowledge and hands-on experience in styling, cutting, chemical treatments, facial treatment, application of cosmetics and nail care and design. Science concepts including human anatomy, physiology, histology, and bacteriology are covered and heavily relied upon throughout the course. This program prepares students to take the State of Michigan Board of Cosmetology exam. Students begin this two-year program with the completion of a full time, ten-week summer session after their sophomore year. The first year program continues during the school year for three hours per day. The second summer will be a part or full time (per instructor recommendation), eight to ten week requirement. The second school year until program completion. Students also have the option to start the summer after their junior year and finish the program as an MJ Murphy student after graduating from high school. Students become eligible to work with patrons in the beauty college after satisfactory completion of 350 clock hours. In order to be licensed by the State, the student must complete 1500 clock attendance hours. At the time of completion, the student will be eligible to take the State Board Examination.

**\*This course is taught at the MJ Murphy Beauty College in Mt. Pleasant. Summer Attendance is Required.**

## **COURSE CONTENT**

Cosmetology Laws & Rules/Safety & Sanitation  
Client Communications/Scalp & Hair Treatment  
Applied Anatomy, Physiology, & Histology  
Applied Chemistry  
Hairdressing/Leadership  
Career Exploration/Manicure/Pedicure  
Chemical Hair Restructuring  
Hair Coloring  
Facials/Systems  
Artificial Nails  
Applied Anatomy, Physiology, & Histology  
Applied Chemistry  
Salon Management/Clinic  
State Board Preparation

## **SPECIAL CLASS FEATURES**

Hands-on experience in a real world salon  
Preparation to take State Licensing exam  
Visual/Performing/Applied Arts Credit  
Opportunity to earn college credit

## **EMPLOYMENT SKILLS FOR THE FUTURE**

Customer Service  
Teamwork  
Problem-Solving  
Ability to communicate with diverse clientele  
Applied mathematics



## **Criminal Justice**

The Criminal Justice program gives students the opportunity to explore the basic concepts and potential careers in the Criminal Justice field. The program provides instruction in law enforcement, corrections systems, and juvenile justice systems. Criminal justice is primarily an academic program with some physical fitness aspects. Students will also have opportunities for hands-on activities, such as, handcuffing, investigations, and firearms training (training weapons only). There will be multiple field trips and guest speakers to give the students firsthand knowledge of what it is like to be a police officer, corrections officer, juvenile worker, and other careers in the field.

### **COURSE CONTENT**

- Public Safety Branches
- Law and Legal System
- Organizational Structure
- Professional Standards including Ethics and Legal Responsibility
- Safety, Health and Environment
- Public Relations
- Career Development
- Workplace Technology
- Problem Solving / Investigations
- Leadership and Team Work
- Communications
- Applied Academic in Law and Public Safety

### **SPECIAL CLASS FEATURES**

- Real-world experience
- Guest speakers from various fields
- Co-op opportunities available
- Job shadow opportunities available
- Visual/Performing/Applied Arts Credit
- Opportunity to earn College credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

- Teamwork
- Communication skills
- Problem-Solving and Ethical Reasoning
- Leadership

## **Culinary Arts**

The Culinary Arts program offers students a hands-on experience in the food service industry. Students are taught the key components in food preparation and restaurant management. The students will participate in menu planning, food inventory (ordering and stock rotation) and safe food preparation. Students also learn basic preparation of a variety of ethnic food styles. Real world experience is gained by working in an on-campus, full-service restaurant. Culinary students are responsible for customer service, dining room and business management. This course prepares students for entry-level employment or a college degree focused on food design, preparation and restaurant management.

### **COURSE CONTENT**

- Culinary Core
- ServSafe & Sanitation
- Guest Relations
- Basic Cooking
- Baking & Pastry
- Management
- Cost Control & Culinary Math
- Marketing & Entrepreneurship
- Advanced Cooking
- Garde Manger (Pantry Chef)
- Sustainability & Nutrition

### **SPECIAL CLASS FEATURES**

- Completers of the two-year program will be eligible to become ServSafe Certified.
- Co-op opportunities available
- Job shadow opportunities available
- Opportunity to earn College credit
- Visual/Performing/Applied Arts Credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

- Hands-on full-service training in student-run restaurant
- Food prep and cooking and baking
- Inventory and menu planning
- Customer Service
- Teamwork

## **Digital Media**

The Digital Media/Web Productions program is taught using a “hands-on” project-based approach to the world of information technology for business applications and multimedia design (2D, 3D, animation, motion graphics, video production and web site design and development will be explored). The program provides comprehensive skills in the design and use of information technology. Industry standard software such as: Adobe Photoshop, Animate, Dreamweaver, Illustrator, Premiere Pro, After Effects, etc. will be used to complete real-world projects.

### **COURSE CONTENT**

- Web Site Design & Layout
- Web Development
- Web Administration
- Graphic Design
- Project Management
- Customer Service & Planning
- Digital Communication
- Development Tools
- Multimedia Production
- Design & Safety Standards
- Web Testing & Evaluation
- Technical Support

### **SPECIAL CLASS FEATURES**

- Opportunity to participate in Business Professionals of America (BPA)
- Co-op opportunities available
- Job shadow opportunities available
- Opportunity to earn Visual/Performing/Applied Arts Credit
- Opportunity to earn college credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

- Multimedia production
- Web design and development
- Communication
- Self-directed and teamwork project management

## **Drafting**

Students will create plans that visually communicate how something functions or is to be constructed. This course utilizes visual problem solving and project planning for product development, architectural construction and/or other mechanical projects such as reverse engineering, product improvement, and mechanical assemblies. This course teaches entry level job skills and prepares students for a career in Architecture, Landscaping or the Manufacturing industry.

### **COURSE CONTENT**

2D Drawing/CAD  
Geometric Construction  
Orthographic Projection  
3D/Parametric Modeling  
Dimensioning and Tolerancing  
Supplemental Views  
Architectural/Engineering Drawings  
Manufacturing Process  
Engineering Technology and Safety  
Engineering Design Concepts  
Technical Materials  
Research and Development Applications  
Career Preparation and Employability

### **SPECIAL CLASS FEATURES**

Computer-Aided Design (Auto CAD)  
Collaborative work with other classes  
Co-op opportunities available  
Job shadow opportunities available  
Opportunity to earn College credit  
Senior math credit  
Visual/Performing/Applied Arts Credit  
Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Customer Service  
Troubleshooting  
Creativity  
Teamwork

## **Educational Careers**

The Educational Careers course provides students an understanding of teaching as a career. Each student will have an opportunity to observe a teacher and learn teaching skills in a real world setting. Students will be placed in their home communities with an assigned mentor teacher. Through classroom activities, students will also become more aware of current trends relating to children, families, and the work place.

\*Students must have excellent attendance and be able to pass a background check.

### **COURSE CONTENT**

Human Growth and Development  
Communication and Collaboration  
Diversity  
Classroom Management and Guidance  
Applied Learning and Field Experience  
Health and Safety  
Employability Skills and Career Planning  
Learning Environment and Climate  
Ethics and Professional Responsibility  
Systems and Legal Issues  
Instructional Strategy/Technology  
Curriculum Planning and Assessment

### **SPECIAL CLASS FEATURES**

Work experience as a teacher assistant  
Planning, preparation, and presentation of developmentally appropriate lesson plans  
CPR and First Aid knowledge  
An understanding of child development and classroom management techniques  
Co-op opportunities available  
Job shadow opportunities available  
Opportunity to earn College credit  
Visual/Performing/Applied Arts Credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Teamwork  
Communication  
Work-site experience with elementary/middle school children, special needs programs, or other educational sites.

## **Electronics**

Electronics' students learn system installation, maintenance, operation and repair of all types of electrical units; including car stereos, computers, and industrial robots. Students practice circuit construction, residential wiring, computer hardware, troubleshooting, and system design in an industrial lab. Standard equipment repair includes electric guitars, amplifiers, gaming consoles, music devices, power tools, headphones, appliances. Additional complex equipment, such as, amplifier repair, robotics, computer interfacing, customization, digital and linear circuits, and industrial controls are also explored. The career focus of this course is preparation for an electronics technician and for post-secondary education in engineering and/or technology. Advanced students serve as project leaders.

### **COURSE CONTENT**

AC/DC--electrical fundamental

Electrical Safety

Principles of Power Conversion--transformers

Electrical documentation/Communication--Blueprint, wiring diagrams, schematics

Electrical test equipment and measurement--power supplies, meters

Cabling and soldering--conductors

Controls--motors and logic controllers

Tools, fasteners, equipment (+safety related)

Prototype and Design and Manufacturing--devise analysis

Information Technology Application (specific IT software)

Employability skills, careers, work habits, teamwork

Problem solving and critical thinking

### **SPECIAL CLASS FEATURES**

Real world Industrial robotics and electronics lab

Co-op opportunities available

Job shadow opportunities available

Opportunity to earn College credit

Senior math credit

Visual/Performing/Applied Arts Credit

Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Installer and repair technician

Trouble-shooting

Communications

Critical and Creative Thinking

Teamwork and collaboration

## **Graphics/Printing Communications**

This Graphics program is a dynamic opportunity to study the various methods of reproducing images by printing, duplicating, screen printing, and photography. This includes computer copy preparation encompassing the use of Adobe Photoshop, Illustrator, and InDesign, scanners and laser printers, laser engraving and bindery. This course is designed for students who have a career interest in graphic design, printing fields, commercial design, advertising layout, and packaging design. Skills in customer service, estimation, and production are developed in the student-run printing lab.

### **COURSE CONTENT**

- Intro to design and image development
- Introduction to image output
- Introduction to finishing operations
- Employability skills and Portfolio
- Applied academics
- Industry Overview
- Safety and Health
- New Media, Advanced Design & Image Development
- Leadership
- Advanced image output
- Advanced finishing operations
- Project Management

### **SPECIAL CLASS FEATURES**

- Real-world job production
- Printing, duplicating, screen printing and photography
- Vinyl Signage
- Co-op opportunities available
- Job shadow opportunities available
- Visual/Performing/Applied Arts Credit
- Opportunity to earn College credit
- Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

### **EMPLOYMENT SKILLS FOR THE FUTURE**

- Customer service
- Estimating job costs
- Computer copy preparation
- Scanners and laser printer
- Laser engraving
- Vinyl Signage Cutting
- Bindery

## **Health Careers/CENA/Pharmacy Technician**

The Health Careers program offers students the opportunity to acquire knowledge and skills that are applicable to many health careers. In this one or two year program students will complete a core curriculum related to the Health Science Program. Topics include, but are not limited to, Medical Terminology, Medical Math, Anatomy and Physiology, Health Facility Safety, CPR and First Aid training. Students will also explore different health careers, participate in work-based learning experiences and complete a hands-on clinical experience. Students can select a curriculum path focused on becoming a CENA or another health-related career, such as pharmacy technician or veterinarian studies. At the end of the year, CENA, Pharmacy Tech and Vet studies students may have the opportunity to become certified.

\*Students must be able to pass a background check.

### **COURSE CONTENT**

Medical Terminology  
Communications  
Teamwork  
Safety  
Systems  
Legal (charting) & ethical standards  
Technical skills (CPR)  
Health maintenance  
Employability  
Academic foundations (Anatomy & Physiology) & medical math  
Work-based learning

### **SPECIAL CLASS FEATURES**

Training and/or certification in CPR and First Aid  
Certified Nursing Assistant (CNA) certification  
Pharmacy Technician certification  
Veterinarian studies certification  
Clinical experience  
Guest speakers from various health career fields  
Opportunity to participate in HOSA – a national health care organization for students  
Co-op opportunities available  
Job shadow opportunities available  
Opportunity to earn College credit  
Senior math credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Problem-solving  
Patient care  
Teamwork



# Interior Design

Interior Design is all about how we experience our spaces. In this program students interested in Interior Design, Architecture, Landscape or other areas of design will have a creative outlet to explore the foundational skills of design. Students develop skills in hand drafting, Auto-CAD (computer aided drafting), 3D modeling, color, presentation techniques, barrier free design, specifications and material selection. Students apply the skills learned in the classroom with hands-on experience in a real world setting. Painting, hanging wallpaper and ceramic tiling are a few of the entry level skills students will master preparing them to work in various aspects of a career in interior design.

## **COURSE CONTENT**

Measurement Techniques/ Drafting  
Blueprint Symbols Circulator Pattern  
Principles & Elements of Design  
Color Theory  
Professional design organization  
Employability Skills  
Advanced Tech. Skills  
Interpreting prints & Specifications  
Leadership and Teamwork  
Codes and Barrier Free Design  
Data Collection Analysis  
Worksite

## **SPECIAL CLASS FEATURES**

Interior design/drafting techniques  
Material selection  
Auto CAD/Sketchup  
Portfolio development  
Co-op opportunities available  
Job shadow opportunities available  
Visual/Performing/Applied Arts Credit  
Senior Math Credit  
Opportunity to earn College credit  
Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

## **EMPLOYMENT SKILLS FOR THE FUTURE**

Painting, Hanging Wallpaper, Ceramic Tiling  
20/20 kitchen design  
Problem-Solving  
Math concepts  
Blueprint reading  
Auto CAD

## **Machine Trades**

Machine Trades' students learn safety, manufacturing skills, and good work habits as they relate to the machine trades industry. Metal working theory and a variety of hand tools will be covered. Students will learn to operate engine lathes, vertical milling machines, drill presses, saws, and surface grinders. Other areas covered will be print reading, layout, measurement, math applications, and basic computer aided machining (CAM). Projects are designed to develop skills needed in the machine trades industry. Advanced students learn manufacturing processes, print reading, Geometric Dimensioning and Tolerance (GD&T), precision measurement, set ups, electrical discharge machine operations, tool and cutter grinding, maintenance of computer aided machining (CAM), computer-aided design (CAD), lock out/tag out, jig and fixture building, basic working of a die, and plastic mold building.

### **COURSE CONTENT**

Metal Working Theory/Materials  
Inspection and Measurement  
Print Reading and GD&T  
Bench work  
Occupational Skills/Work Habits  
Saws, Drills, and Power Tools  
Maintenance and Set Up  
Mill I/Lathe I  
Manufacturing Processes  
Advanced Milling/Turning/Grinding  
CNC/CAD/CAM  
Safety

### **SPECIAL CLASS FEATURES**

Real-world lab  
Co-op opportunities available  
Job shadow opportunities available  
Opportunity to earn college credit  
Senior math credit  
Visual/Performing/Applied Arts Credit  
Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Critical Thinking and Problem-solving  
Communication  
Teamwork

# Marketing

In the Marketing program, students develop practical skills that can be applied to a broad variety of businesses. Class projects require students to apply marketing concepts such as product design, distribution, purchasing, merchandising, logistics, market research, pricing, quality service, advertising, and promotion. A hands-on approach is utilized as students operate “The School Store” and organize special events. Students are challenged to act as organizational business leaders, taking on supervisory and management roles.

## **COURSE CONTENT**

Functions/Foundations of Marketing  
Selling  
Promotion and Social Media Pricing  
Financial Analysis  
Channel Management  
Entrepreneurship, Risk Management, and Operations  
Marketing Information Management  
Strategic Market Planning  
Product Service Planning  
Human Resources, Management, and Careers  
Economics

## **SPECIAL CLASS FEATURES**

Student-run school store  
Product merchandising  
Advertising and promotion Inventory (ordering and tracking)  
Real-world event planning  
Co-op opportunities available  
Job shadow opportunities available  
Senior math credit  
Visual/Performing/Applied Arts Credit  
Opportunity to earn college credit  
Opportunity to participate in Business Professionals of America (BPA)

## **EMPLOYMENT SKILLS FOR THE FUTURE**

Customer Service  
Teamwork  
Problem-solving  
Organization

## **Mechatronics**

Mechatronics is a combination of Machining, Design Software (CAD), Electronics, Electricity, Robotics, and Pneumatics. Students will complete hands-on projects to learn automated manufacturing processes and prepare for various industrial careers and post-secondary options. This STEM program will give students an introduction to Manufacturing and the opportunity to design, develop, build, and test devices. This program prepares students for entry level hands on careers or leads well into post-secondary training/electrician apprenticeships.

### **COURSE CONTENT**

Systems Integration/Mechatronics  
System Design/Prototype/CADD  
Electrical/Motor Controls/VFD/Servo/Sensor Driven  
Mechanical Control Systems/Electrical Controls  
PLC/Diagnostics  
Fluid Power/Pneumatics  
Robotics  
Electronics/Sensors  
Manufacturing/Machining/CNC  
Quality/Measurements  
Blueprint/Schematics/Drafting

### **SPECIAL CLASS FEATURES**

Real-world lab experience  
Co-op opportunities available  
Job shadow opportunities available  
Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)  
Senior math credit  
Visual/Performing/Applied Arts Credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Self-directed participation  
Teamwork skills  
Critical thinking and problem-solving  
Trouble-shooting

## **Radio and Television Broadcasting/Production**

The Radio and Television Broadcasting/Production course introduces students to the many aspects of radio and television production. The class focuses on equipment operation, studio procedures, lighting, audio, digital editing, special effects, and pictorial composition. Student projects include newscasts, commercials, public service announcements, interviews, variety shows and dramatic presentations. Students are encouraged to develop their own ideas as well as work on team projects.

### **COURSE CONTENT**

Mass Media--Media's Effect on Society--History and Theory/principles  
Pre-Production I including safety and teamwork and storyboard and organizing skills  
Ethics and Legal Responsibility  
Production I  
Post-production I  
Digital Media (podcasting, webinars, codec, access stations, webcasting, software and IT).  
Current and Emerging Technology and Equipment (DSLR, motion picture)  
Broadcast Journalism and Communication  
Pre-Production II  
Production II  
Post-production II  
Employability and Career Development (including portfolio development, Safety and Employability)

### **SPECIAL CLASS FEATURES**

Real-world radio and television lab  
Information technology applications  
Co-op opportunities available  
Job shadow opportunities available  
Opportunity to earn College credit  
Visual/Performing/Applied Arts Credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

Organization  
Communication  
Fundamentals of Broadcast Journalism  
Problem-solving  
Teamwork

## **Small Engines Technology**

In the Small Engine Technology course, students learn to repair small engines and train for entry level employment in the field. Students learn to repair two-stroke and four-stroke engines, including ignition, carburetor, and exhaust systems. In addition, this class explores two and four-cycle high performance modifications. Students build team-working skills by collaborating on projects, developing troubleshooting techniques, and excellent customer service.

### **COURSE CONTENT**

- Basic two/four-stroke operation
- Fuel Systems
- Ignition Systems
- Equipment/Technology
- Measuring/Conversions
- Electrical Systems
- Drive System
- Chassis Systems
- Maintenance
- Troubleshooting
- Employability/Professional Skills
- Safety

### **SPECIAL CLASS FEATURES**

- Real-world experience on two-stroke and four-stroke engines
- Co-op opportunities available
- Job shadow opportunities available
- Senior math credit
- Opportunity to earn College credit

### **EMPLOYMENT SKILLS FOR THE FUTURE**

- Customer Service
- Troubleshooting
- Teamwork

# **Welding**

This Welding class is designed for the student who has a genuine interest in learning welding for their future occupation. Many areas of welding including oxyacetylene, electric arc, mig, and tig, manual and automatic flame cutting are taught. This program provides students with hands on experience in a real- world lab. Students learn the fundamentals of welding theory, use of related hand tools and equipment and perform a variety of welding techniques. Class projects include fabrication and repair work. Welding students are involved in layout, inspection, measurement and design.

## **COURSE CONTENT**

- Occupational Orientation
- Safety and Health for Welders
- Shielded Metal Arc Welding (SMAW)
- Manual OxyFuel Gas Cutting (OFC)
- Flux Cored Arc Welding (FCAW)
- Drawing and Welding Symbols
- Gas Metal Arc Welding (GMAW)
- Mechanized OxyFuel Gas Cutting (OFC)
- Gas Tungsten Arc Welding (GTAW)
- Plasma Arc Cutting (PAC)
- Weld Inspection and Testing
- Carbon Arc Cutting (CAC-A)

## **SPECIAL CLASS FEATURES**

- Real-world experience
- Co-op opportunities available
- Job shadow opportunities available
- Senior math credit
- Visual/Performing/Applied Arts Credit
- Opportunity to earn College credit
- Opportunity to participate in MITES (Michigan Industrial and Technology Education Society)

## **EMPLOYMENT SKILLS FOR THE FUTURE**

- Communication
- Detail-oriented
- Teamwork
- Safety knowledge
- Creativity
- Critical Thinking