CAREER & TECHNICAL EDUCATION

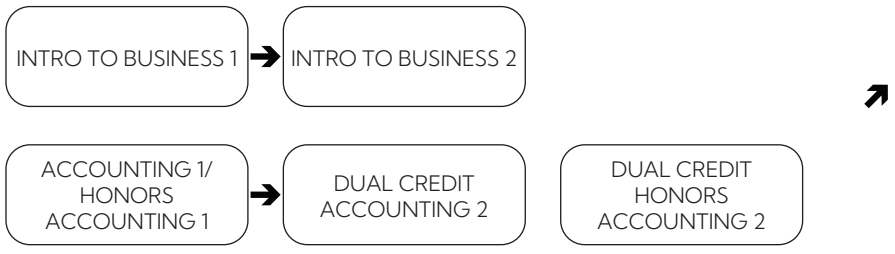
The Career and Technical Education Department provides a comprehensive educational experience for students to develop and apply technical skills and knowledge that will lead to successful professional careers.

The Career and Technical Education Department consists of Business Education, Family and Consumer Sciences, and Technology and Engineering Education. These elective courses specialize in the highly skilled trades, applied sciences, and modern technologies to prepare students for the many different career opportunities available. In addition, these courses will enhance a student's education by giving them the skills necessary to directly start their career or get a head start with their post-secondary education by receiving dual credit through Moraine Valley Community College.

BUSINESS & ACCOUNTING SEQUENCES:

Recommended Business Management Sequence:

Recommended Finance & Accounting Sequence:



Required Course:

NATIONAL BUSINESS HONOR SOCIETY (NBHS)

The National Business Honor Society recognizes outstanding high school students who have demonstrated excellence in business education, leadership, service and character. Membership in NBHS is both a distinction and an opportunity–honoring academic success while encouraging continued growth in the study and practice of business.

Eligibility:
- Juniors or seniors
- Must have completed or be currently enrolled in their third business course.
- Minimum GPA of 3.5 in business courses and 3.0 overall.

Application Process:
- Submit application form, transcript, and resume to the local chapter advisors.
- Highlight all business courses on transcript
- Selection is made by chapter advisors.

COURSE DESCRIPTIONS:

ACCOUNTING 1 — Year: 9, 10, 11, 12 | Credit: 1

BE320

This full-year course is for average and above average students who intend to select a career in any area of business. It is a prerequisite for Accounting II. At the end of this course, students will be able to:
solve basic accounting problems
- analyze and demonstrate business transactions in a journal
- prepare financial statements showing the condition of a business
- demonstrate mastery of accounting terms as they relate to the recording, summarizing, and reporting phase of the records of a business

Highly recommended for students planning for a college major in business.

BUSINESS LAW — Year: 11, 12 | Credit: .5

BE352

Students will learn how to plan and outline the steps required to become entrepreneurs and to own their own business from the business law point of view. Students will learn about how contracts arise, how to buy real estate, marriage formalities, buying a car, legality of a contract, and negotiable instruments.

COMPUTER CONCEPTS — Year: 9, 10 | Credit: .5

BE110

This is an introductory course designed to develop computer literacy with a focus on the Office 365 Suite. Students will learn the basic word processing and document formatting techniques using Microsoft Word, spreadsheet development using Microsoft Excel, and will learn both basic and advanced presentation techniques using Microsoft PowerPoint. In addition, students will become proficient in using the school's common systems such as file management using OneDrive. The acquired knowledge and skills will effectively integrate into required academic courses.

CONSUMER EDUCATION

Year: 10, 11, 12 | Credit: .5

BE391

This course equips students with knowledge and skills in financial literacy, designed to empower them to make informed financial decisions and build a foundation for lifelong well-being. Through practical, real-world applications, students will explore topics such as budgeting, saving, banking, investing, credit and debt management and financial planning for postsecondary education and careers. The course also covers strategies for becoming an informed consumer, risk management and acquiring credit for personal/business ventures. By building practical financial skills and concepts throughout the course, students will gain the confidence to navigate the financial challenges of today's economy and develop the ability to make wise financial choices for their future.

This is a required course for graduation.

DUAL CREDIT ACCOUNTING 2

Year: 10, 11, 12 | Credit: 1

BE620 | BE620H – Honors

This full year course is for average and above average students who intend to select a career in accounting and related areas. At the end of this course students will be able to:

- solve multi-ledger and payroll problems on a computer using accounting software
- analyze and demonstrate transactions of a departmentalized business
- prepare interim and end-of-the period reports showing the condition of a departmentalized business
- analyze financial statements to include trend analysis, percentage, and ratio analysis
- demonstrate mastery of accounting terms as they relate to accounting on a cash and accrual basis

Highly recommended for students planning for a college major in business.

Prerequisite: Completion of Accounting 1 or Honors Accounting 1

Completion of this course with a grade of A, B, or C will qualify students for Dual Credit at MVCC. (OSA 249-Quickbooks for Office Professionals)

ENTREPRENEURSHIP

Year: 10, 11, 12 | Credit: .5

BE201

The Entrepreneurship class will get students prepared to open businesses. Students will work in groups and learn how to develop business plans, marketing strategies, and the financial aspect of running a business. Through real-world projects, students will be exposed to different types of innovative entrepreneurial concepts, such as design thinking, rapid prototyping, and team building. Students will also be challenged to identify and develop their personal professional strengths along with their innovative spirits.

Prerequisite: Successful completion of Intro to Business 1 or Intro to Business 2

HONORS ACCOUNTING 1

Year: 10, 11, 12 | Credit: 1

BE900

This course introduces students to the fundamental processes that allow businesses to account for their income and expenses. Students will analyze financial transactions and create financial reports based on them. This course teaches the same curriculum as Accounting I but at a faster pace with additional, more challenging activities.

INTRO TO BUSINESS 1

Year: 9, 10, 11, 12 | Credit: .5 (1st semester)

BE101

This course will introduce students to the study of business organization, the American business system, and the role of government. Students will be exposed to corporate organizations and will participate in creating a business plan.

INTRO TO BUSINESS 2

Year: 9, 10, 11, 12 | Credit: .5 (2nd semester)

BE102

This course expands on business concepts and focuses on understanding the financial needs of small businesses, levels of management, business leadership skills and ethics in the business world. Students will engage in simulations that reinforce topics of study.

PROFESSIONAL OFFICE SKILLS

Year: 9, 10, 11, 12 | Credit: 1

BE120

This course will focus on the development of skills needed for the management of the office environment; understanding how the flow of documents and information are used to successfully manage a customer base of an entrepreneurial business. The course will explore, through hands-on projects, using Microsoft Office 365 Suite (Excel, Word, Power Point, Publisher, Outlook, and OneDrive), understanding of the workplace environment, business communication, and records management. Students will develop problem-solving skills, teamwork, and communication skills needed in the workplace along with exploring career opportunities.

SPORTS ENTERTAINMENT MARKETING

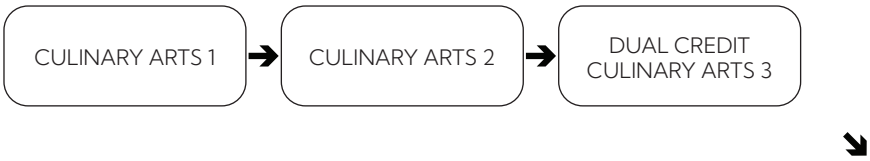
Year: 11, 12 | Credit: .5

BE341

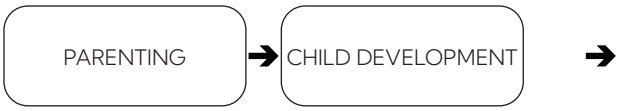
This course will introduce students to marketing and advertising concepts used in the sports and entertainment industries. Emphasis is placed on the following: branding and licensing, the market plan, economic foundations, and promotion. Topics will be taught through real-world case studies, group projects, and discussions of current events.

FAMILY & CONSUMER SCIENCE SEQUENCES:

Recommended Culinary & Restaurant Management Sequence:



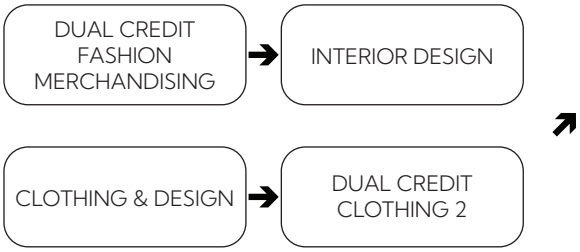
Recommended Early Childhood Education Sequence:



CAREER INTERNSHIP

Capstone of many CTE programs. Apply what you learn in a real-world setting.

Recommended Fashion & Apparel / Interior Design Sequence:



COURSE DESCRIPTIONS:

CULINARY ARTS 1 — Year: 9, 10, 11, 12 | Credit: 1

FC500

This full year introductory course is designed for the student who is interested in learning proper cooking methods and techniques. Topics include safety, sanitation, nutritional needs, and careers. Lab experiences include fruits, vegetables, quick breads, yeast breads, dairy products, cookies, cakes and cake decoration, candy, meats, and meal preparation. By the end of the course, students will be able to:

- prepare complete meals
- execute a recipe successfully
- demonstrate proper safety and sanitation procedures

CULINARY ARTS 2 — Year: 10, 11, 12 | Credit: 1

FC550

Culinary Arts 2 is designed for students wishing to pursue a career in Food Service or Hospitality. This course is second in sequence that offers an introduction to professional Culinary Arts principles including food safety and sanitation. Special emphasis will be placed on proper commercial kitchen procedures. Students are introduced to culinary terminology, techniques, and culinary history with an emphasis on food service operations and management. Culinary instruction will involve measurement practices, safety and sanitation, fundamental work with commercial tools, and equipment that will include knife skills along with an overview of classic cooking methods.

Prerequisite: Successful completion of Culinary Arts 1

DUAL CREDIT CULINARY ARTS 3 — Year: 11, 12 | Credit: 2

FC 580

Dual Credit Culinary Arts 3 provides and builds more advanced culinary skills. This course is the third and final in sequence that offers a further development to Culinary Arts principles including marketing, inventory control, and restaurant management. New preparation and cooking techniques will be introduced as well as the use of additional commercial equipment. Students will continue their learning of new techniques and skills, which can lead to a career in food service or hospitality. Students will receive job readiness training, take field trips, participate in job shadow days, attend chef demonstrations, and have the opportunity for special events, internships, and competition. Students will also have the chance to earn the Food Service Sanitation Manager Certification during this course.

Prerequisite: Successful completion of Culinary Arts 2

This course is 2 periods long. Students will not have a lunch/study.

Completion of this course with a grade of A, B, or C will qualify students for Dual Credit at MVCC. (RTM 100 – Food Services Sanitation and RTM 103 Basic Food Theory)

DUAL CREDIT FASHION MERCHANDISING

Year: 9, 10, 11, 12 | Credit: 1

FC071

This semester course will focus on identifying fashion trends, understanding how clothing functions in society, and how to successfully market clothing through store layout, advertising, and the media. Fashion merchandising will be explored through hands on projects, such as fashion portfolios, hand weaving, and exploring career opportunities. Students will develop critical thinking skills, teamwork, and professional skills needed in the workplace.

Completion of this course with an A, B, or C will qualify the student for dual credit at the College of DuPage (FASHI 1210 – Introduction to the Fashion Industry)

CHILD DEVELOPMENT

Year: 10, 11, 12 | Credit: 1

FC320

This full year course is designed for students who are interested in learning about children's growth and development. Topics include children and parenting, contraceptives, pregnancy and childbirth, the baby's first year, the child from one to three, the child from four to six, and the child from seven to twelve. During this course, students will also have an opportunity to take one of the real care babies with flexible scheduling such as weekday or weekend. At the end of this full year elective course, students will be able to:

- explain the stages of prenatal development
- explain the stages of pregnancy
- understand the developmental patterns of the child from birth through 12 years of age
- understand how the four domains of child development interact as the child grows
- demonstrate how to care for a newborn baby (real care babies)

CLOTHING & DESIGN

Year: 9, 10, 11, 12 | Credit: 1

FC110

Clothing and Design is a lab-focused course focused on apparel and garment construction. Students will learn the fundamentals to garment construction, study current fashion trends, and explore career opportunities in the fashion industry. Students will gain hands-on experience using sewing and embroidery machines as well as many other notions found in a sewing room. Students will complete a drawstring backpack, pajama pants, a clothing item, and a project of choice.

DUAL CREDIT CLOTHING 2

Year: 10, 11, 12 | Credit: 1

FC610

Clothing II is a lab-focused course focused on advanced apparel and garment construction. Students will learn advanced techniques to garment construction, study current fashion trends and explore career opportunities in the fashion industry. Students will build on the techniques learned in Clothing and Design I, such as darts, pleats, and gathering. Students will complete projects such as lined clothing, separating zippers, and advanced quilting.

Prerequisite: Successful completion of Clothing and Design 1

Completion of this course with an A, B, or C will qualify the student for dual credit at the College of DuPage (FASHI 1200 – Beginning Clothing Construction)

INTERIOR DESIGN

Year: 9, 10, 11, 12 | Credit: .5

FC072

This semester course will focus on applying elements and principles of design to floor plans, exterior and interior design, housing structures, and career opportunities. Interior Design will be explored through hands on projects, such as housing portfolios, mosaic tiling, and floor plan design. Students will develop critical thinking skills, teamwork, and professional skills needed in the workplace.

PARENTING

Year: 9, 10, 11, 12 | Credit: .5

FC342

This semester course is designed for students who are interested in learning about the roles and responsibilities of being a parent. Topics of discussion include decisions about parenting, positive parenting, the beginning of parenthood, understanding children's growth and development, and the challenges of parenting. During this course, students will also have an opportunity to utilize the real care pregnancy profile simulator (Empathy Belly).

TECHNOLOGY & ENGINEERING EDUCATION SEQUENCES:

Recommended Architecture/Drafting Sequence:

DUAL CREDIT CAD 1 & 2 → DUAL CREDIT CAD 3 → CAD 4

Recommended Automotive Sequence:

AUTOS 1 & 2 → DUAL CREDIT AUTOS 3 → AUTOS 4 → DUAL CREDIT AUTOS 5 – BRAKES

CAR CARE ESSENTIALS

Recommended Carpentry/Building Trades Sequence:

WOODS 1 & 2 → WOODS 3 → WOODS 4

ELECTRICAL WIRING

GEOMETRY IN CONSTRUCTION

CAD

DUAL CREDIT HEATING & AIR CONDITIONING

Recommended Computer Repair Sequence:

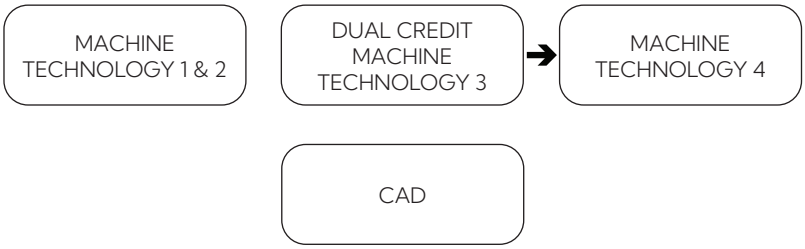
DUAL CREDIT COMPUTER SERVICING 1 → DUAL CREDIT COMPUTER SERVICING 2

ELECTRONICS

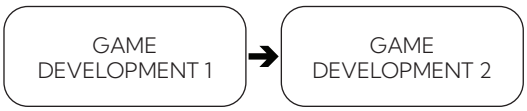
Recommended Graphic Design Sequence:

DUAL CREDIT GRAPHIC ARTS 1 & 2 → DUAL CREDIT GRAPHIC ARTS 3 → DUAL CREDIT GRAPHIC ARTS 4 → DUAL CREDIT GRAPHIC ARTS 5

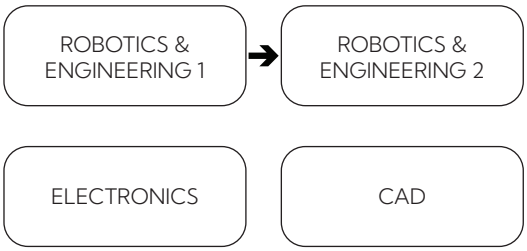
Recommended Machinist/Manufacturing Sequence:



Recommended Programming Sequence:



Recommended Robotics & Engineering Sequence:



Recommended Welding/Pipefitting Sequence:

COURSE DESCRIPTIONS:

ALGEBRA IN MANUFACTURING

Year: 9, 10 | Credit: 1
1 credit for IT250, 1 credit for MA250

IT250

Algebra in Manufacturing (AIM) is an Algebra 1 course taught using project-based learning. AIM contextualizes manufacturing processes and business standards using principles of Algebra 1, through teaching quadratics and the law of diminishing returns. Learners using AIM curriculum will operate a business running a fabrication lab customizing textiles and manufacturing wood, metal, and/or plastic goods. The proceeds generated from the business are then utilized to fund the venture and proven philanthropic opportunities for community service, or monetary gifts to local charities. Students learn skill sets in engineering techniques including sublimation, CNC operations, and rapid prototyping. Other areas for student engagement include composite technologies, alternative energies, and automation robotics.

AUTOS 1

Year: 9, 10, 11, 12 | Credit: .5

IT381

This is a semester elective course designed for students who wish to gain knowledge of the fundamentals of the automobile. Students will learn about: chassis design, engine construction, major subsystems, how the engine is constructed, how the engine produces horsepower, and proper tool usage through the disassembly and reassembly of an engine.

AUTOS 2

Year: 9, 10, 11, 12 | Credit: .5

IT382

This is a semester elective course designed for students who wish to gain knowledge of the fundamentals of the automobile leading to a service level job. Students will learn how to perform common automotive maintenance including: oil change, battery maintenance, brake pad/shoe removal and installation, tire inflation, tire rotation, tire balancing, tire rim and removal and installation.

DUAL CREDIT AUTOS 3

Year: 10, 11, 12 | Credit: 1

IT680

This year-long course provides theory and related hands-on experience on live automobiles as a foundation for advanced automotive careers. Students will demonstrate: the fundamentals of shop safety; understand engine fundamentals and operation; engine fuel, lubrication, and cooling fundamentals, and troubleshooting procedures.

Completion of this course with a grade of A, B, or C will qualify the student for dual credit at MVCC. (AUT 112 Introductory Automotive Technology)

Prerequisite: Auto 1 or Auto 2

AUTOS 4

Year: 11, 12 | Credit: 1

IT880

This year-long course provides theory and related hands-on experience on live automobiles for the advanced automotive student. Students will schedule, troubleshoot, and work on automobiles. Focus on the use of test instruments, service/troubleshooting procedures, and manuals for the proper and safe repair of vehicles.

Prerequisite: Auto 3

DUAL CREDIT AUTOS 5 - BRAKES

Year: 11, 12 | Credit: 1

IT980

This year long course provides instruction in the theory of operation, diagnosis, and servicing of automotive disc and drum brake systems, both standard and ABS brake systems are included. Service and troubleshooting of vacuum, hydraulic, and electrical controls are covered.

Prerequisite: Completion or co-current enrollment in Autos 4.

Completion of this course with a grade of A, B, or C will qualify the student for Dual Credit at MVCC. (AUT121 – Automotive Brake Systems)

CAR CARE ESSENTIALS

Year: 10, 11, 12 | Credit: .5

IT282

This is a semester elective course that introduces students to the automobile as it relates to the everyday driver. The focus of the course is preventive maintenance on automobile systems, troubleshooting, buying cars, and other fundamental information.

Having a valid driver's license is encouraged.

DUAL CREDIT COMPUTER SERVICING 1

Year: 9, 10, 11, 12 | Credit: 1

IT300

This is a full-year course that covers what a PC is, how it works, and the operating system that controls it. A student will learn about components that make up a PC, the standard operating systems, learn basic networking concepts and installation procedures, and learn basic system troubleshooting by using diagnostic software and hardware. At the end of this course, students will be able to:

- disassemble and reassemble a computer
- install and configure hardware and software upgrades
- use problem-solving techniques to solve a wide range of computer problems
- perform routine maintenance tasks on a computer
- install and configure a small office network

This course will prepare students to take the A+ Certification Exam.

Completion of this course with a grade of A, B, or C will qualify the student for dual credit at MVCC. (LAN 101 – Orientation to IT Professions, LAN 111 – IT Hardware Essentials and LAN 112 – IT Operating Systems Essentials)

DUAL CREDIT COMPUTER SERVICING 2

Year: 10, 11, 12 | Credit: 1

IT400

This is a full year course that covers what a NETWORK is, how it works, and what controls it. A student will learn about different types of networks and the components that make up a network. The course will also cover basic network troubleshooting by using diagnostic software and hardware. The students will also learn about advanced problem-solving techniques used to maintain computers in a global setting. The students will also program advanced networking devices and set up security protocols on the machines. This course will prepare students to take the NET+ Certification Exam.

Completion of this course with a grade of A, B, or C will qualify the student for dual credit at MVCC. (LAN 103 Orientation to Cyber Security - LAN 121 Managing LAN Hardware - LAN 122 Managing Network OS)

Prerequisite: Computer Servicing 1

DUAL CREDIT DRAFTING 1 / CAD

Year: 9, 10, 11, 12 | Credit: .5 (1st semester)

IT301

This course introduces students to basic drafting techniques using AutoCAD (Automated Computer Aided Drafting). The focus of this course is to develop understanding of AutoCAD starting from beginning drawings and guiding to more advanced skills. Activities will include applying drafting techniques, solving problems, and practicing AutoCAD commands.

Completion of Drafting 1 and 2 with a grade of A. B, or C will qualify the student for dual credit at MVCC. (AET 101 Orientation to AET Careers – MDT 101 Introduction to Drafting)

DUAL CREDIT DRAFTING 2 / CAD

Year: 9, 10, 11, 12 | Credit: .5 (2nd semester)

IT302

This course is for students interested in advanced drafting techniques and computer aided drafting applications. Students will study dimensioning, orthographic projection, auxiliary views, sections, pictorials, and projections. Each activity will review, reinforce, and expand learning in the field of Computer Aided Drafting. This course also explores different careers available to individuals with AutoCAD knowledge and skills.

Completion of Drafting 1 and 2 with a grade of A, B or C will qualify the student for dual credit at MVCC. (MDT 101 Introduction to Drafting)

DUAL CREDIT DRAFTING 3 / CAD

Year: 10, 11, 12 | Credit: 1

IT600

Students study mechanical and architectural drawings using Autodesk software. The students will also use the 3D software inventor to complete 3D mechanical drawings. The students will learn about rapid prototyping to design and rapid prototype out series of mechanical 3D models. Students also learn sketching techniques and use descriptive geometry as a component of design, measurement, and computer modeling. Students will brainstorm, research, develop ideas, create models, test and evaluate design ideas and communicate solutions. At the end of this course, students will be able to:

- complete a set of working drawings
- understand advanced dimensioning techniques
- learn theory and develop skills in geometric forms and two-dimensional drawings
- draw basic floor plans and elevations
- draw and render entry-level computer assisted drawings
- develop 2D and 3D drawings using AutoCAD software
- develop 3D models using the AutoDesk Inventor software

Completion of this course with an A, B or C will qualify the student for dual credit at MVCC. (MDT 145 Introduction to Computer Aided Drafting – OSA 236 Adobe Photoshop)

Prerequisite: Drafting 1 or 2

DUAL CREDIT DRAFTING 4 / CAD

Year: 11, 12 | Credit: 1

IT800

This is a full year course for the advanced drafting students who wish to further their education in the drafting and the architecture fields. Instruction is also provided in the areas of drawing framing plans, wall sections, fireplace sections, door sections, door and window schedules, dimensioning structural steel drawings, constructing column detail drawings, preparation of structural foundation, slab and floor plans, drawing electric, block, schematic, and electrical connection drawings. Skills relating to CAD include preparation of a basic CAD drawing, developing 3-dimensional drawings and selecting appropriate line work, line weight, and color. At the end of this course the students will be able to:

- show proficiency in constructing geometric drawings complete with lettering and dimensioning
- explain the role of Computer Aided Design (CAD) for creating mechanical and architectural drafting
- develop 2D and 3D drawings using the Inventor Software.
- Create projects using AutoCAD and CNC machining software

Prerequisite: Drafting/CAD 3

DUAL CREDIT ELECTRONICS

Year: 9, 10, 11, 12 | Credit: 1

IT352

This course introduces students to basic electronic circuits. The students will learn to read electronic drawings, identify components and functions, and assemble circuits. The students will also build electronic circuits by learning the soldering process. By the end of this course, the students will attain a firm understanding of electrical parameters, series and parallel circuits, Ohm's Law, voltage, current, resistance, and testing equipment.

Completion of Electronics 1 with a grade of A, B, or C will qualify the student for dual credit at MVCC (ELT 101 – Electricity & Electronics)

DUAL CREDIT GRAPHIC ARTS 1 & 2

Year: 9, 10, 11, 12 | Credit: 1

IT320

Students will learn the basics of digital illustration, how to design and print t-shirts, buttons, stickers, notepads, calendars, and laser engraving. Students will be introduced to the basics of graphic design including digital image manipulation (Photoshop), illustration (Illustrator), and page layout (InDesign). Students will have the opportunity to operate professional printing equipment including a screen-printing press, laser engraver, vinyl cutter, flatbed cutter, digital printer, and wide format printer.

Completion of Graphic Arts 1 & 2 with a grade of A, B, or C will qualify the student for dual credit at MVCC (CIS 232 – Intro to Adobe Suite)

DUAL CREDIT GRAPHIC ARTS 3 — Year: 10, 11, 12 | Credit: 1

IT620

Students will learn and train in a production environment that is commonly found in all graphic communication occupations. Students will learn how to operate industry standard equipment. Screen and digital printing will be used to produce a variety of projects including t-shirts, vinyl stickers, product design, and large format posters. Students will also play an important role in many high-quality challenging projects, including printing for student organizations and other manufactured jobs for the high school and community. Students will learn the elements and principles of design, and how to select the appropriate drawing tools and media to communicate ideas. Students will use industry standard software such as Adobe Illustrator, Adobe Photoshop, and Adobe InDesign to develop the technical skills for layout design and production.

Prerequisite: Graphic Arts 1 & 2

Completion of this course with an A, B, or C will qualify the student for dual credit at MVCC. (CIS 234 – Adobe Illustrator)

DUAL CREDIT GRAPHIC ARTS 4 — Year: 11, 12 | Credit: 1

IT820

Students will continue to learn and train in a production/studio environment where students will be provided with learning experience related to the tools, materials, processes, and practices utilized in the printing industry. Students will also assume a leadership role in production tasks and perform independent study projects in the graphic arts area. Students will choose a learning pathway related to their post-secondary interests. Pathways include:

- Advanced Design & Illustration
- Production Technologies
- Community & Client-Based Design
- Portfolio Development

Each pathway will ensure students develop advanced graphics related skills that will support transition to college or entry level work in the field of graphic communications and design.

Prerequisite: Graphic Arts 3

Completion of this course with an A, B, or C will qualify the student for dual credit at MVCC. (CIS 236 – Adobe Photoshop)

DUAL CREDIT GRAPHIC ARTS 5 — Year: 12 | Credit: 1

IT930

This course is designed to further develop skills utilizing Adobe InDesign. The course is project oriented with emphasis on independent work and decision-making in the design and layout of computer-generated documents, including forms, brochures, and newsletters. Other projects include publishing web pages, utilizing photo editing tools; linking and embedding objects from other applications; and publishing for print and web.

Prerequisite: Graphic Arts 4

Completion of this course with an A, B, or C will qualify the student for dual credit at MVCC. (CIS 235 – Adobe InDesign & Microsoft Publisher)

Completion of CIS 232, 234, 235, and 236 will allow students to apply for graduation at MVCC with a Certificate in Graphics and Desktop Publishing.

DUAL ENROLLMENT HEATING & AIR CONDITIONING — Year: 11, 12 | Credit: 1 (repeatable)

IT900

This is a dual enrollment course through MVCC. This course is for students wishing to pursue a career as an HVAC technician. Completion of the HVAC Dual Enrollment program will earn a Basic Air Conditioning Technician Certificate while still in high school. Earn a total of 19 college credits upon completing the required courses and you'll be on your way to begin a career as a heating, air conditioning, and refrigeration mechanic, installer, or service representative.

Successful completion of this course will earn 3-4 college credits at MVCC depending on the course taken.

Please note: This course is taught at MVCC, and students must provide their own transportation. Students must be in junior/senior standing and complete the pre-application process. There is tuition and additional fees are required for students enrolled in this course.

ELECTRICAL WIRING — Year: 9, 10, 11, 12 | Credit: 1

IT351

This course is for students interested in learning basic house wiring techniques. Throughout this course, the students will construct electrical circuits using circuit breakers, switches, outlets, and other electrical fixtures. The students will also learn the skill of bending conduit and installing electric boxes while completing a practical wiring situation. The students will build these circuits based on the National Electric Code and local building codes. The students will learn the proper use of electrician's hand tools and testing equipment to troubleshoot circuits. Students will be able to receive OHSA Certification 10 with the completion of this course.

GAME DEVELOPMENT & COMPUTER PROGRAMMING 1 — Year: 9, 10, 11, 12 | Credit: 1

IT200

This full year course introduces students to an introductory level of video game and computer programming using the GML and Visual HTML5 languages. Computer gaming and design courses prepare students to design computer games by studying design, animation, artistic concepts, digital imaging, coding, scripting, multimedia production, and game play strategies. Advanced course topics include, but are not limited to, level design, environment and 3D modeling, scene and set design, motion capture, and texture mapping. Upon completion of this course students will learn how video games are developed, designed, and organized using programming software. Students will also get hands-on experience in developing their own programmed video games using math and physics concepts. At the end of this course students will be able to:

- use technical skills related to software development, computer programming and graphic design
- utilize creative, innovative, and critical thinking
- demonstrate communications and collaboration as an individual and part of a team
- use appropriate and accessible digital tools for research and learning
- use engineering, physics and mathematical concepts critical to game development
- research post-secondary and career options and resources related to STEM, and Computer Science/ Engineering programs at 2- and 4-year universities

GAME DEVELOPMENT & COMPUTER PROGRAMMING 2

Year: 10, 11, 12 | Credit: 1

IT220

This full year course introduces students to an advanced level of online game design and computer programming using the Python and Java Script languages. Computer gaming and design courses prepare students to design computer games by studying design, animation, artistic concepts, digital imaging, coding, scripting, multimedia production, and game play strategies. Advanced course topics include, but are not limited to, level design, environment and 3D modeling, scene and set design, motion capture, and texture mapping. Students will learn how video games are developed and get hands-on experience in developing their own online programmed video games using math and physics concepts. Students will also learn to use the 3D game engine and Unreal to design software applications in a real 3D environment. At the end of this course students will be able to:

- design software using Java Script
- demonstrate how to install JDK Software and Visual Basic Studio
- use types and variables in Python
- understand methods and debugging in the Python language
- demonstrate how data and control structures work in Java Script
- Utilize user input and debugging using the Python and Java Script languages
- Use object-oriented programming with the Python and Java Script languages
- Demonstrate how to program using the Unreal Game Engine

Prerequisite: Game Development and Computer Programming 1

GEOMETRY IN CONSTRUCTION

Year: 10, 11, 12 | Credit: 1
1 credit for IT350, 1 credit for MA350

IT350 | This course is cross-listed with MA350

Geometry in Construction is an integrated geometry in construction course. The common core aligned geometry curriculum is taught in the context of construction. The course is team taught by a math teacher and a technology teacher. The concepts within the course are organized to complement the skills and the knowledge needed in the building process, starting with foundational concepts. The students in this course will have math days as well as build days. On the build days, the students will be working in teams to build their project. This course will provide students the opportunity to immediately apply what they are learning in the classroom to what they are doing on the build site. Students will receive two credits for this year long, blocked course: one elective credit, one math credit.

MACHINE TECHNOLOGY 1

Year: 9, 10, 11, 12 | Credit: .5

IT331

The Machine Technology 1 course enables students to create metal projects from aluminum and brass while using various machine tools and equipment. Course content will include reading prints, precision measurement, safety, and the proper use of machines such as lathes, milling machines, drill press, band sawing machines, and finishing equipment. Students will also earn their OSHA 10 certification.

MACHINE TECHNOLOGY 2

Year: 9, 10, 11, 12 | Credit: .5

IT332

This course is a continuation of Machine Technology 1, allowing the students to build on skills previously learned while incorporating more advanced processes including: threading, precision measurement, CNC programming and machining, and advanced project design and creation.

DUAL CREDIT MACHINE TECHNOLOGY 3 — Year: 10, 11, 12 | Credit: 1

IT630

This full-year course guides the advanced student into more diverse areas of machining and manufacturing. The course introduces students to the skills common to a variety of manufacturing-related occupations such as: applying safety practices, selecting materials, performing bench work operations, precision measurement, layouts, and operating a variety of machines and tools in the shop. The students will learn advanced CNC programming and machine operation.

Prerequisite: Machine Technology 1 or 2

Completion of this course with an A, B, or C will qualify the student for dual credit at the College of DuPage. (MANUF 1151 – Machine Shop 1)

MACHINE TECHNOLOGY 4 — Year: 11, 12 | Credit: 1

IT830

This course is a continuation of the Machine Technology program and builds on the skills introduced in those courses. This course begins to offer students the opportunity to specialize in more advanced areas of manufacturing such as: engineering and project design, advanced machine tool set-up and operation, mass production, part inspection and quality control. The students will have the opportunity to incorporate CNC components into their project design and sharpen the skills needed for desired employment in the field of machining and manufacturing.

Prerequisite: Machine Technology 3

ROBOTICS & ENGINEERING 1 — Year: 9, 10, 11, 12 | Credit: 1

IT460

The course will focus on the study of mechanics, electronics, computer control, and design. During this class, students will learn to build and program robots and micro-controllers. The students will explore basic mechanical systems such as servos, motors, gears and levers, electronic systems with analog and digital, 2D and 3D design and computer control systems. The course is project based, and students will develop engineering problem solving skills through a series of hands-on activities and projects. Students will often work together in design teams to build their own understanding of new ideas and to solve real problems. They will work together to design, develop, produce, and test their projects. The major engineering design fields will be researched, and students will learn about the theory and hands-on skills for each discipline.

ROBOTICS & ENGINEERING 2 — Year: 10, 11, 12 | Credit: 1

IT560

This course is a study of advanced robotics and industrial automation that will help students develop and expand their skills and knowledge of robotics and related engineering topics. Students in this class will build task oriented robotic systems and operate them with RC and computer control in their respective programming language. The students will also be introduced to automation systems, programmable logic controllers (PLC) and modular production systems. The course is STEM based and involves the students using engineering principles and problem-solving skills through a series of hands-on activities and projects. Students will often work together in teams to overcome problems of design, development, production, and testing of the solution.

Prerequisite: Robotics and Engineering 1

ROBOTICS WITH SCIENCE

Year: 9, 10, 11, 12 | Credit: 2
1 credit for SC200, 1 credit for IT40

IT460

This lab-based course will focus on the study of mechanics, electronics, computer control/design and the underlying science. During this class, students will learn to build and program robots and micro-controllers. The students will explore basic mechanical systems such as servos, motors, gears and levers, electronic systems with analog and digital, 2D and 3D design and computer control systems. The associated science concepts will be emphasized in the context of robotics and engineering. The course is project based, and students will develop engineering problem solving skills through a series of hands-on activities and projects. Students will often work together in design teams to overcome problems of design, development, production, and testing of the project. The major engineering and science fields will be researched, and students will learn about the theory, application, and hands-on skills for each discipline.

WEB & MEDIA DESIGN

Year: 9, 10, 11, 12 | Credit: 1

IT210

This course will focus on using Adobe Dreamweaver CC, Adobe Animate, and Adobe XD through step-by-step instructions and in-depth explanations. Students will learn how to get started with Dreamweaver, create a website, and develop a web page. They will work with text, style sheets, images, and links. Students will learn to position page content with CSS and tables. They will also learn how to manage a web server and files. With Adobe Animate and Adobe XD, students will learn how to draw objects, how to work with symbols and interactivity, and create Apps. They will focus on creating animations, creating special effects, and developing applications.

WELDING 1

Year: 9, 10, 11, 12 | Credit: .5

IT361

This course enables students to gain knowledge of the properties, uses, and applications of basic welding using various processes to join and cut steel, such as oxyacetylene and shielded metal arc welding. Students will gain experience in identifying and selecting the appropriate techniques used to create and weld metal while using a variety of machines and tools. At the end of this course, students will be able to:

- demonstrate skills using both Gas and Arc welding processes
- complete individual projects by using welding tools and equipment
- determine the proper welding technique appropriate for a given job
- demonstrate basic measurement

WELDING 2

Year: 9, 10, 11, 12 | Credit: .5

IT362

This course is for students who want to continue their understanding of Arc and Gas welding processes and start a basic introduction to other welding processes. Students will study beginning theories of MIG welding as well as understanding basic CNC Plasma Cutting. At the end of the course, students will be able to:

- correctly use welding tools and equipment
- complete a required project using the MIG welding process
- show proficiency in both gas and arc welding
- design and construct welding projects

DUAL CREDIT WELDING 3

Year: 10, 11, 12 | Credit: 1

IT660

This course assists students in gaining the knowledge and developing the basic skills needed to be successful in welding technology. Units of instruction include Arc and MIG welding as well as cutting metal using plasma and oxyacetylene. In addition, students learn the basics of blueprint reading, precision measuring layout, and production process planning. At the end of this course, students will be able to:

- perform required projects using major welding processes
- demonstrate proficiency in Oxy-Fuel Cutting
- demonstrate understanding of basic blueprint reading
- construct individual welding projects
- demonstrate skills using the CNC Plasma cutting process and techniques

Prerequisite: Welding 1 or 2

Completion of this course with a grade of A, B, or C will qualify student for dual credit at MVCC. (WLD 111 Basic Arc/Gas Welding I)

DUAL CREDIT WELDING 4

Year: 11, 12 | Credit: 1

IT860

This course builds on the skills and concepts introduced in Welding 3 and provides more in-depth skill development in various types of welding including horizontal, vertical, overhead techniques. This course is for students wanting to be involved in the field of welding as an occupation or career. At the end of this course, students will be able to:

- show proficiency in Arc and Gas welding processes including MIG/TIG and Plasma cutting, and CNC Plasma cutting
- perform independent study projects in the welding area

Prerequisite: Welding 3

Completion of this course with a grade of A, B, or C will qualify the student for dual credit at MVCC. (WLD 112 Basic Arc/Gas Welding II)

WOODS 1 — Year: 9, 10, 11, 12 | Credit: .5

IT341

This semester course will provide students with the knowledge and skills necessary to work safely and efficiently in the woodworking setting using both hand tools and power tools. Students will:

- develop the knowledge and skills necessary to work safely and efficiently within a shop setting
- develop safety and skills using both hand and power tools
- have the ability to identify different types of wood and their uses
- be exposed to the industrial woodworking environment
- explore new woodworking technologies such as laser engraving and CNC machining
- explore career opportunities within the field

WOODS 2 — Year: 9, 10, 11, 12 | Credit: .5

IT342

This course is a continuation of Woods 1 and offers the student the opportunity to further study the woodworking industry by working with the tools and materials incorporated in various construction/ building environments. Students will:

- expand on their knowledge and skills necessary to work safely and efficiently within a shop setting
- develop safety and skills using both hand and power tools
- have the ability to identify different types of wood and their uses
- be exposed to the industrial woodworking environment
- explore new woodworking technologies such as laser engraving and CNC machining
- explore career opportunities within the field

WOODS 3 — Year: 10, 11, 12 | Credit: 1

IT640

This course is designed to give advanced skills in construction carpentry and for students who desire to pursue the field of construction. At the conclusion of this course students will be able to:

- make set-ups and operate all machinery in the shop
- perform basic home and commercial frame construction
- read and design basic plans for home construction
- demonstrate skills in using machine hand tools for construction carpentry
- build storage sheds
- layout and level a plot
- use a surveyor's transit

Prerequisite: Woods 1 or 2

WOODS 4 — Year: 11, 12 | Credit: 1

IT840

This course is for students wanting to be involved in the field of Construction Trades as an occupation or career. At the end of this course the student will be able to:

- show proficiency in building footings, foundations, floors, walls, ceilings, roofs, doors, and window framing
- show proficiency in finishing interior walls, ceilings, floors, and stair construction
- demonstrate safe and correct use of hand and power tools in the construction trades area
- understand and recognize job site safety
- perform independent study projects in the Construction area

Prerequisite: Construction Trades/Woods 2

CAREER INTERNSHIP — Year: 12 | Credit: 2

IT990

The Career Internship class is designed for students with career interests in Auto Mechanics, Welding, Graphic Arts, Drafting, and Accounting. Students in this course develop the skills required to achieve an advantage in a competitive job market. This capstone class extends the student's knowledge past the courses offered at ACHS. The class prepares students to be quality producers and collaborative workers through "hands on" career experiences aligned with the student's career interests and goals.Emphasis will be placed on the development of communication, problem solving and critical thinking skills in the workplace setting. This is a two-period class at the end of the school day which allows for independent transportation to the worksite.

Prerequisite: Application and consent of Division Chair, Counselor, and Instructor.

CTE WORK EXPERIENCE — Year: 12 | Credit: .5

IT950 | Fall / Spring Repeatable

This course is for students who would like to continue their study in a given area after they completed the last course in a sequence or where the student cannot fit the desired course in their schedule. The student would work with the teacher to create independent projects and also assist in demonstrations for the class activities. The student must have completed the appropriate coursework in the Business, Family and Consumer Science or Technology and Engineering Education department to gain consent and approval to enroll in this course.

Prerequisite: Consent of teacher and approval of Division Chair

3D ANIMATION & RENDERING 1

Year: 9, 10, 11, 12 | Credit: .5

IT411

This is a one-semester course designed for students who are interested in basic animation. This course begins with an introduction to 3D animation, emphasizing basic shape design and geometric morphing, geometric rendering using 3-dimensional space, and animating a rendered object using 3D Studio Max software. Students will develop skills to produce the following projects:

- a rendered 3D vehicle design
- an animated logo design
- multiple animated and rendered scenes
- lighting flash camera effect within a scene

3D ANIMATION & RENDERING 2

Year: 9, 10, 11, 12 | Credit: .5

IT412

This is a one-semester continuation course that revisits 3D Animation concepts and introduces more advanced techniques and projects to further expand a student's knowledge using the software. The students will gain knowledge concepts in areas relating to visual spatial skills when working on projects using advanced 3D geometry.

Prerequisite: 3D Animation & Rendering 1