

The Career Development Center

2021-2022 Course Catalog

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GENERAL INFORMATION

The Career Development Center (CDC) is located at 1200 S. Sunset in Longmont, Colorado and is the Career and Technical Education (CTE) center for the St. Vrain School District and is one of eight CTE centers in the state of Colorado. The CDC offers classes that provide real-world, hands-on experiences in pathways that are high-wage, high-growth, and high-demand. These pathways provide students with opportunities to acquire knowledge and skills linked with specific post-secondary programs leading to a two-year or four-year degree, and provide students with industry recognized certifications giving them a jump start in their careers.

Daily Schedule

- Classes at CDC normally meet every other day for two blocks (some meet everyday)
 - A1/2 and B5/6: 8:10-10:58 AM
 - A3/4 and B7/8: 11:32-2:20 PM
- On monthly late start days, CDC will operate an “open lab” format from 9:30-2:20 where students may come in and work on projects or catch up on other work as assigned.

Transportation

SVVSD buses run from all home high schools to and from the CDC daily. This is a free service for all district high school students. Here is the [link](#) to request transportation to CDC from your home HS.

Registration

All students must request courses online through MyApp. Students may request enrollment in any class at CDC (subject to prerequisites) and will be notified by their home high school the beginning of May if they are

accepted. Attendance, grades, credit completion, and student ICAP's, are considered when making decisions, ensuring that students are placed in appropriate classes.

Freshmen and CDC

- All of the entry level courses in our 7 program areas are available to Freshmen, including those with concurrent enrollment

Credit

All CDC courses are considered practical arts electives and count towards graduation requirements.

Concurrent Enrollment (College Credit)

- Many CDC courses also qualify for concurrent (college) credit through Front Range Community College (FRCC), and Metropolitan State University (MSU).
- Benefits of concurrent enrollment include:
 - Earning college and high school credit at the same time.
 - Courses count towards certification/degree requirements.
 - No tuition cost, as long as the course is passed with a C or better
 - A jumpstart towards a career
- Concurrent (College Credit) is available for many different courses in our program areas and are denoted by highlighted and underlined links to the appropriate college's course description page which you may refer to for more information.
- Students enrolled in these classes *must* complete registration paperwork for **both** SVVSD and the appropriate institution (FRCC/MSU/Aims CC)
- [SVVSD Concurrent Enrollment Agreement](#)
 - Use this link to fill out the SVVSD concurrent Agreement
- Use the following links to apply for admission and register at the appropriate college
 - [Front Range Community College](#)
 - Click Apply Now button
 - Sign up for College Opportunity Fund (COF) Stipend
 - Complete registration process
 - [Metropolitan State University](#)
 - Students fill out separate concurrent application (paper or online)
 - [Aims Community College](#)
 - Fill out online application

Please watch the CDC website for up-to-date information and for additional opportunities not listed in this printing: cdc.svvsd.org

Contact Kate Topham, CDC Counselor with any questions: 720-494-3964, or by email at



National Technical
Honor Society



topham_katherine@svvsd.org



AGRICULTURAL SCIENCES

Program Requirements:

- Students may take coursework in either the animal or plant pathways.
- All students will develop personal, leadership, and career skills through FFA participation.

- All students will develop and maintain an individual Supervised Agricultural Experience Program and maintain online records through **The AET**.
- **Introduction to Agriscience, CTE 9302** is a mandatory prerequisite for any additional coursework in the program area.

Introduction to Agriscience, CTE 9302

Designed to teach students about the opportunities in the agriculture industry and to give students a basic knowledge of all career pathways of agriculture: Animal, Plant, Natural Resources and Environmental Science, Agribusiness, Food Products, and Power, Structure, and Technology. Students will be introduced to the concepts and principles of agriculture in society, develop career and educational goals, as well as work on personal, leadership, and industry skills through their Supervised Agricultural Experience (SAE).

Grades 9-12; 1 Semester (Fall); 1.0 Practical Arts Credit; PreRequisite: N/A

Advanced Agriscience, CTE 9311 A&B **Industry Certificate(s) Available**

Designed to further expose students to the aspects of the agriculture industry. Students will have the opportunity to focus their interests within a particular pathway and work independently in order to prepare themselves for a career and postsecondary education within the agriculture industry. Students will analyze the concepts and principles of agriculture in society, revise their career and educational goals, enhance personal, leadership, and career skills, and evaluate their progress and plan for achievement through continued work within the SAE.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credit; Prerequisite: CTE 9302 & instructor approval

Agribusiness, CTE 9315 A&B **Industry Certificate(s) Available**

Designed to expose students to the opportunities available within agriculture business related careers. It is taught as a self-paced independent study in order to fit any student's schedule; students are required to attend during their scheduled blocks each day that school is held at CDC. Content areas include: Introduction to Business, Starting and Operating a Business, Financing, Sales and Marketing, Commodity Trading, Economics, and Agricultural Law. Students will analyze the concepts and principles of agriculture in society, revise their career and educational goals, enhance personal, leadership, and career skills, and evaluate their progress and plan for achievement through continued work within the SAE.

Grades 10-12, 2 Semesters; 2.0 Practical Arts Credit; Prerequisite: CTE 9302 & instructor approval

Animal Science, CTE 9324 **Industry Certificate(s) Available**

An advanced science-based course designed to introduce students to the production and management of agriculturally important animals. Students will understand industry and scientific terminology, analyze and identify external anatomy and internal body systems and physiology, including: nutritional needs, reproduction methods and processes, genetic influence, health, disease, and facility management. Students will use species-specific evaluation and selection methods. Students will analyze the concepts and principles of agriculture in society, revise their career and educational goals, enhance personal, leadership, and career skills, and evaluate their progress and plan for achievement through continued work within the SAE.

Grades 9-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9302

Equine Science, CTE 9325 **Industry Certificate(s) Available**

An advanced science-based course designed to introduce students to the production and management of horses. Students will understand industry and scientific terminology, analyze and identify external anatomy and internal body systems and physiology, including: nutritional needs, reproduction methods and processes, genetic influence, health, disease, and facility management. Students will use species-specific evaluation and selection methods. Students will analyze the concepts and principles of agriculture in society, revise their career and educational goals, enhance personal, leadership, and career skills, and evaluate their progress and plan for achievement through continued work within the SAE.

Grades 9-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9302

Veterinary Science, CTE 9328 **Industry Certificate(s) Available**

Designed to expose students to all aspects of the veterinary field. The course will cover: Animals in Society and Research, Veterinary Laws and Ethics, Business Management, Veterinary Medical Terminology, Veterinary Equipment, Mathematical Applications in Veterinary Science, External and Internal Anatomy in Dogs, Cats, and Livestock, Animal Behavior, Veterinary Practices in Animal Handling and Identification, Clinical Exams and Vital Signs, Blood Samples, Sutures, and Injections, Laboratory, Hospital and Surgical Procedures, and Pharmacology.

Students will analyze the concepts and principles of agriculture in society, revise their career and educational goals, enhance personal, leadership, and career skills, and evaluate their progress and plan for achievement through continued work within SAE.

Grades 9-12; 1 Semester; 1.0 Science Credit; Prerequisite: CTE 9302.

Greenhouse I and II, CTE 9351 A&B and CTE 9353 A&B

Introduces students to the biology of horticultural plants and basic horticultural practices while caring for the program's on-site greenhouse. Also emphasized are greenhouse design, systems, management, and the major greenhouse crops and their cultural needs. Students are responsible for planting, watering, and cultivating a variety of flowers, bedding plants and vegetables. Students will also analyze the concepts and principles of agriculture in society, revise their career and educational goals, enhance personal, leadership, and career skills, and evaluate their progress and plan for achievement through continued work within the SAE.

Grades 9-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisites: CTE 9302 or CTE 9351 A&B



AUTOMOTIVE TECHNOLOGY



Program Requirements:

Maintenance and Light Repair, CTE 9803 A&B is a mandatory prerequisite for any additional coursework in this program area.

Maintenance and Light Repair, CTE 9803 A&B **Industry Certificate(s) Available**

Students will explore automotive industry terminology and standards, classifications, career opportunities, shop operations and safety, tool identification and usage, diagnostic equipment identification and usage, automotive systems, tires and wheels, hydraulic braking systems, cooling systems, lubrication systems, and preventative maintenance. The basics of automotive braking systems: operation, diagnosis and repair of disc, drum, and hydraulic braking systems will be covered as well as the basics of electrical systems, electronic systems, batteries, starting systems, charging systems, lighting systems, electrical instruments and accessories, and ignition systems.

Grades 9-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: N/A

FRCC: [ASE 102 - Introduction to the Automotive Shop](#), [ASE 110 - Automotive Brake Service I](#), [ASE 120 - Basic Automotive Electricity](#), & [ASE 123 - Starting and Charging Systems](#)

Brake Systems, CTE 9802 **Industry Certificate(s) Available**

This course further examines the operation, diagnosis, service and repair of drum, disc, hydraulic, anti-lock, and power assist units and machine operations of today's automobile brake systems. This class also teaches skills to perform service checks and procedures to automotive braking systems and identify the components and types of Anti Lock Braking Systems (ABS) as well as traction control systems.

Grades 10-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9803

A&B

FRCC: [ASE 111 - Automotive Brake Service II](#) & [ASE 210 - Automotive Power and ABS Brake Systems](#)

Suspension and Alignment, CTE 9815 **Industry Certificate(s) Available**

This course examines: design, diagnosis, inspection, and service of suspension and steering systems used on light trucks and automobiles. Course includes power steering, Supplemental Restraint System "SRS" (or airbags) and all alignment procedures on industry standard equipment.

Grades 10-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9803 A&B

FRCC: [ASE 140 - Suspension and Steering I](#) & [ASE 141 - Suspension and Steering II](#)

Engine Performance, CTE 9821 **Industry Certificate(s) Available* ***This class meets every day***

Areas of instruction include intake and exhaust systems, ignition system diagnosis and service, fuel system diagnosis and service, carburetor diagnosis and service, fuel injection diagnosis and service, emission control diagnosis and service, and on-board diagnostic system and service.

Grades 11-12; 1 Semester; 2.0 Practical Arts Credits; Prerequisite: CTE 9803 A&B

FRCC: [ASE 134 - Automotive Fuel and Emissions Systems I](#), [ASE 292 - Automotive Computer and Ignition Systems](#), & [ASE 293 - Automotive Fuel and Emissions Systems II](#)

Engine Repair, CTE 9825 **Industry Certificate(s) Available**

Instruction combines lecture and laboratory experiences in the removal and installation of the automotive engine, transmission, transfer case, and clutch assembly from and into front and rear wheel drive vehicles.

Grades 10-12; 1 Semester (Fall/Spring); 1.0 Practical Arts Credit; Prerequisite: CTE 9803

FRCC: [ASE 130 - General Engine Diagnosis](#), [ASE 160 - Automotive Engine Repair](#)

Diesel Power Mechanics, CTE 9826 **Industry Certificate(s) Available** **||New Course Added for Fall 2021!!**

Students will learn about the many different types of diesel powered vehicles, research information in corresponding maintenance and parts manuals, along with identifying and selecting appropriate mechanical fasteners, fuels, fluids as they relate to the diesel industry. Enables the student to perform diagnostics and troubleshooting on heavy equipment, truck cab, diesel engine, and electrical systems, and complete appropriate maintenance records. Focuses on the importance of preventive maintenance as well.

Grades 11-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9803

A&B

Aims CC: [DPM 101 - Introduction to Diesel Mechanics](#), [DPM 111 - Cab and Electrical PMI](#), [DPM 112 - Engine Systems PMI](#)



HEALTH SCIENCES

Pathway Requirements:

- *Students enrolled in the Health Sciences Program are required to take the following three courses as prerequisites for any additional coursework.*
 - **Medical Office Administration, CTE 9515**
 - **Intro to Healthcare and Medical Terminology, CTE 9516,**
 - **Anatomy and Physiology, CTE 9517 (Or home high school equivalent)**
- *Students enrolled in the Health Sciences program will also participate in HOSA (Health Occupation Students of America), providing them the opportunity to develop leadership and interpersonal skills as well participate in various community-related service projects.*

Medical Office Administration, CTE 9515

This concurrent credit course is one of two introductory courses within the Health Science Pathway where students will learn about the computer technology, personal information management, and communications software used in healthcare. It focuses on the Electronic Health Record (EHR); its content, EHR software, EHR management, patient management and scheduling, and privacy and security of the EHR. Students will also learn the legal concepts within the field, which will help establish a foundation for ethical behavior and decision-making.

Grades: 9-12; 1 semester; 1.0 Practical Arts Credit; Corequisite: CTE 9516

FRCC: [MAP 110 - Medical Office Administration](#)

Introduction to Healthcare and Medical Terminology, CTE 9516

This concurrent credit course is one of two introductory courses within the Health Science Pathway where students will explore the various fields within the healthcare industry and learn about the employability, teamwork, and communications skills needed to be successful. It introduces the basic medical terminology used in healthcare with an emphasis on combining the most common prefixes, roots, and suffixes and how they relate to the major body systems. This course also provides students hands-on experience with the basic clinical skills required in patient care, explaining the theory behind them and the proper technique for performing them.

Grades 9-12; 1 semester; 1.0 Practical Arts Credit; Corequisite: CTE 9515

FRCC: [HPR 138 - Intro to Medical Terminology](#)

Anatomy and Physiology for Health Care, CTE 9517 **||Now only a semester!!**

This course builds upon concepts learned in biology while focusing on human anatomy and physiology and is intended for students interested in the healthcare field. Through lecture, labs, and dissections, students will learn

how the structures of the human body (anatomy) function and maintain homeostasis (physiology), as well as the pathophysiology of common diseases and injuries. All twelve human body systems will be covered, as well as the different types of tissue and cell chemistry. Students will have the opportunity to work with the award-winning "Anatomy in Clay" curriculum and participate in a cadaver lab.

Grades 10-12; 1 Semester; 1.0 Practical Arts Credits; Prerequisites: CTE 9515 & CTE 9516

Basic Pharmacology, CTE 9518

Provides an overview of pharmacology language, abbreviations, systems of measurement and conversions. The Controlled Substance Act, prescriptions, forms of medications, patient care applications, drug classifications/interactions, and safety in drug therapy and patient care are presented. Information regarding the measurement of medications, dosage calculations, routes of administration, and commonly prescribed drugs in a variety of medical settings is provided.

Grades 10-12; 1 semester; 1.0 Practical Arts Credit; Prerequisites: CTE 9515 & CTE 9516

Nutrition in Health and Disease, CTE 9519

This course will examine diseases within the body such as diabetes or heart disease that require specialized diets in order to maintain homeostasis. This course will explore the basic components needed to prepare and create dietary plans for specific medical diagnoses and provide students with advanced practice in these skills so they will be more successful when learning at the post-secondary level.

Grades 10-12; 1 semester; 1.0 Practical Arts Credit; Prerequisites: CTE 9515 & CTE 9516

Emergency Response, CTE 9521 **Industry Certificate(s)*

*Available**

Emergency Response is a one semester course based on the National Transportation Safety Board recommendations for first responders and is geared for the student who wants in-depth knowledge and information in pre-hospital emergency care. These individuals, often called "first responders," include but are not limited to firefighters, law enforcement personnel, lifeguards, ski patrollers, emergency response teams, and athletic trainers. The course features lecture, discussion, decision-making activities, skill practice, and video demonstration.

Grades 10-11; 1 Semester; 1.0 Practical Arts Credit; Prerequisites: CTE 9515 & CTE 9516

Introduction to Sports Medicine, CTE 9522

Introduction to Sports Medicine is a one semester class that introduces students to athletic training procedures as they relate to the athlete, physical educator, coach, and athletic trainer. The course includes a history of the athletic training profession, ethics, proper documentation of injuries, taping, and the principles of athletic training. Topics covered in this class include an overview of all aspects of athletic training, prevention and treatment of common athletics-related injuries, as well as general anatomy and physiology review related to sports and athletics.

Grades 10-12; 1 semester; 1.0 Practical Arts Credit; Prerequisites: CTE 9515 & CTE 9516

Disease Processes and Treatment, CTE 9524 ||New Course Added for Fall 2021||

This concurrent credit course covers disease processes and drug therapy used to treat commonly found pathological conditions. Normal anatomy and physiology of each body system is reviewed and conditions that disrupt homeostasis are examined. Conditions considered are both acquired and congenital. Diagnostic methods, management, treatment modalities, and prognoses are discussed. Classifications of drugs are introduced and the various groups of pharmacologic agents, their actions; absorption, metabolism and excretion; and reasons for use are covered.

Grades 10-12; 1 semester; 1.0 Practical Arts Credit; Prerequisites: CTE 9515 & CTE 9516

Corequisite: CTE 9517; FRCC: [HPR 232 - Disease Processes and Treatment](#)

Nursing Assistant, CTE 9531 **Industry Certificate(s) Available** ||Now Open to Juniors||

This course is designed for the student who enjoys caring for others and is interested in a career in healthcare. This course covers the basic theory and skills needed for working as a nursing assistant in a long-term care facility, home health care agency, or a hospital and requires students to participate in a minimum 16 hour supervised clinical experience at an approved long-term care facility. Students will also receive training in the American Heart Association (AHA) [Basic Life Support \(BLS\) CPR & AED Training for Healthcare Professionals](#). Upon successful completion, students are prepared to take the Colorado State Board of Nursing written and skills exams for certification as a Nursing Assistant.

Grades: 11-12; 1.0 Semester; 1.0 Practical Arts Credit; Prerequisites: CTE 9515, CTE 9516, CTE 9517

Exercise and Health Science, CTE 9555 **Industry Certificate(s) Available**

This course is for the individual who enjoys physical activity and is interested in learning the science and psychology involved in adopting an active and healthy lifestyle and working in the fitness industry and is an excellent complement to our Intro to Sports Medicine class. Students will learn about strength and cardiovascular training techniques, writing fitness programs and assessment, and motivation and communication techniques. They will review human anatomy and physiology, and learn about energy production, exercise modalities, and first aid and CPR skills. Students will have the opportunity to use this knowledge and apply these skills during job shadowing in fitness, sports, and research facilities. On completion of the course, students will be able to sit for the ACE certification exam.

(Student must be 18 years old by end of Senior Year)

Grade 12; 1 semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9517 & CTE 9522

Emergency Medical Technician, CTE 9560 A&B **Industry Certificate(s) Available**

The Emergency Medical Technician course prepares the EMT student to provide pre-hospital assessment and care for patients of all ages who have a variety of medical conditions and traumatic injuries. The course features lecture, discussion, demonstration, and skill practice and requires students to participate in a minimum 16 hour supervised clinical experience with an approved provider. Students will also receive training in Universal Precautions with Personal Protective Equipment and the American Heart Association (AHA) [Basic Life Support \(BLS\) CPR & AED Training for Healthcare Professionals](#). This course prepares students to take the National Registry Certification Test and for employment in the industry.

(Student must be 18 years old by end of Senior Year)

Grade 12; 2 Semesters; 2.0 Practical Arts credits; Prerequisites: CTE 9515, CTE 9516, CTE 9517

Dental Assisting I, CTE 9501 A&B

This class gives the student a basic understanding of the history of dentistry, dental team members' jobs, careers, infection control, the anatomy of the head, anatomy of the oral cavity, histology of the teeth structures, gum structures, oral hygiene, polishing, tooth decay, tooth names, numbers and positioning, impressions, whitening trays, communication skills, ethics, and laws.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9515 & CTE 9516

Dental Assisting II, CTE 9511 A&B **Industry Certificate(s) Available**

Dental Assisting II is designed to instruct students in the treatment rooms and laboratory on all aspects of the dental assistant's duties on the job including: instrument names and passing of them, mixing and passing materials, suctioning, charting, and digital imaging. Students are required to participate in a 40 hour clinical experience outside of class at a Dental office. The course fulfills the radiology and infection control requirements of the Colorado State Dental Practice Act for certification.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9501 A&B

**INTERACTIVE MEDIA TECHNOLOGY****Introduction to Visual Communications, CTE 9038**

In Introduction to Visual Communications students survey visual communications, its history, and its impact on society. Students will demonstrate an understanding of the graphic design and illustration fields today, as well as the tools and media used. It serves as the foundational course for graphic design and illustration majors by exposing students to the various products available within the Adobe suite.

Grades 9-12; 1 Semesters; 1.0 Practical Arts Credits; Prerequisite: N/A

FRCC: [MGD 117 - Intro. to Visual Communications](#)

Adobe Photoshop, CTE 9029 **Industry Certificate(s) Available**

Photoshop concentrates on the high-end capabilities of Adobe Photoshop as an illustration, design, and photo retouching tool. Students explore a wide range of selection and manipulation techniques that can be applied to photos, graphics, and videos. The curriculum follows guidelines set by Adobe as part of their Adobe Certified Associate exams. At the end of this course, students have the opportunity to take the Adobe Certified Associate

exam in Visual Communication Using Adobe Photoshop.

Grades 9-12; 1 Semester; 1.0 Practical Arts Credits; Prerequisite: CTE 9038

FRCC: [MGD 111 - Photoshop I](#)

Adobe Illustrator, CTE 9030 **Industry Certificate(s) Available**

Acquaints students with the processes of a vector-drawing program on the computer. Students learn how to use the tools to create digital artwork that can be used in web design, print media and digital screen design. The class covers relevant tools and techniques as well as industry standards, delivery methods, and output.^[SEP] At the end of this course, students are given the opportunity to take the Adobe Certified Associate exam to earn an industry recognized credential.

Grades 9-12; 1 Semester; 1.0 Practical Arts Credits; Prerequisite: CTE 9038

FRCC: [MGD 112 - Adobe Illustrator I](#)

Adobe InDesign, CTE 9031 **Industry Certificate(s) Available**

Introduces students to InDesign, a page layout program that integrates seamlessly with other Adobe design programs. InDesign delivers creative freedom and productivity to DTP. Class discussions and independent projects supplement hands-on classroom work. At the end of this course, students are given the opportunity to take the Adobe Certified Associate exam to earn an industry recognized credential.

Grades 9-12; 1 Semester; 1.0 Practical Arts Credits; Prerequisite: CTE 9038

FRCC: [MGD 114 - Adobe InDesign](#)

Digital Video Production, CTE 9026 A&B **Industry Certificate(s) Available**

Digital Video Production combines the content of two FRCC courses. In the first semester students will get an introduction to the principles and techniques of video production, including: camera operation, basic script writing, lighting, sound, and basic digital editing. Detailed examination of three elements of filmmaking: pre-production, production, and post-production, as well as aesthetics, will be included. Second semester students will continue working on these elements, but with an emphasis on post production including: media management, editing tools, titles, motion control, transitions, and special effects. Students will make a variety of films in this class and are encouraged to enter a local film festival. The class covers relevant tools and techniques as well as industry standards, delivery methods, and output.^[SEP] Upon completion, students will be able to take the Adobe Certified Associate exam in Video Communication Using Adobe Premiere Pro.

Grades 9-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: N/A

FRCC: [MGD 104 - Videography](#) & [MGD 164 - Digital Video Editing I](#)



ADVANCED MANUFACTURING

Principles of Manufacturing, CTE 9130 A&B **Industry Certificate(s) Available**

In this introductory one-year course, students will gain knowledge and skills in the application, design, production and assessment of products, services and systems and how it applies to the manufacturing industry. The study of manufacturing allows students to reinforce, apply and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems and settings they would experience in the industry. Students will gain a foundation in industry areas such as 3D design software, blueprinting, mechanical engineering, optics, electrical systems, fabrication, and machining. In addition to applied academic and technical knowledge and skills, students will gain an understanding of career opportunities available in manufacturing and what employers require to gain and maintain employment in these careers, as well as the opportunity to receive industry level certification.

Grades 9-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: N/A The SolidWorks logo is located to the right of the text. It features a stylized red 'S' followed by the word 'SOLIDWORKS' in a red, sans-serif font.

Manufacturing Engineering, CTE 9135 A&B **Industry Certificate(s) Available**

Manufacturing Engineering bridges the worlds of engineering and manufacturing. Students will learn about product design, creation, and testing by completing many design challenges. Additionally, students will gain industry skills in 3D modeling software, advanced manufacturing processes, the engineering design process, design for manufacturing, assembly, and quality assurance.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9130 A&B

Materials Engineering, CTE 9132

Materials Engineering is the study of the characteristics and uses of various materials that are utilized in science, technology, and manufacturing. Students will learn the properties of these materials along with how and why they are used for multiple purposes. The course will cover the structure and use of metals, polymers, plastics, glass, ceramics, concrete and other composites. Students will perform tests and experiments utilizing these materials.

Grades 10-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9135 A&B; Corequisite: CTE 9133

Plastics Production, CTE 9133

This class will delve more in depth with the properties and application of plastics. Specifically, students will be introduced to and work with, three of the most common plastic production methods utilized in industry: 3D printing, thermoforming, and injection molding.

Grades 10-12; 1 Semester; 1.0 Practical Arts Credit; Prerequisite: CTE 9135 A&B; CoRequisite: CTE 9132

Advanced Manufacturing, CTE 9134 A&B **Industry Certificate(s) Available**

In this one-year course, students will advance in skills obtained in Principles of Manufacturing. This second year of manufacturing focuses heavily on four advancement areas of study: Electronics, Optics, Machining, and Welding. During this year, students will gain hands-on experience in the four areas of study and develop projects related to current industry trends. Students in Advanced Manufacturing will have various opportunities for industry level certifications. Students will partner with local businesses to gain hands on experience through tours, guest speakers, and projects.

Grades 9-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9130 A&B

Electronics, CTE 9136 A&B **Industry Certificate(s) Available**

The Electronics course of the Advanced Manufacturing Academy is designed to prepare students for positions in electronics or electrical engineering dealing with surface mount soldering, through hole soldering, component testing, PCB production, and handling. Students gain hands-on experience with industry level training, equipment, and electronics manufacturing environments. Students will also gain industry and aerospace recognized certifications.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9130 A&B

Mechatronics, CTE 9775 A&B

Mechatronics explores the combination of mechanical and electrical systems. Students will learn about mechanics principles, digital electronics, coding, programmable logic controls, hydraulics and pneumatics, and systems integration. This class will especially appeal to students interested in pursuing robotics and want to expand their knowledge beyond VEX or other basic robotics courses.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9130 A&B



PROSTART AND CULINARY ARTS

Students are able to earn a National ProStart Certification of Achievement by completing ProStart 1 and ProStart 2 with a "C" or better, pass both national exams with a "C" or better, complete 400 work experience hours, and meet the guidelines of the ProStart Competency Checklist.

Prostart I, CTE 9672 A&B **Industry Certificate(s) Available**

This nationally certified, competency-based program covers all facets of the hospitality industry and includes instruction in food preparation, lodging, customer service, and business management. By completing ProStart Level

1, students master fundamental management and culinary skills needed for success – like leadership, accountability, teamwork and responsibility. Skill areas will include, but are not limited to: Communication, Interviewing & Resumes, Industry Careers, Customer Service, Workplace and Food Safety, Fruits & Veggies, Stocks, Sauces, & Soups, Cooking Methods, and Potatoes & Grains. Students rotate through production and service stations while serving the community at the Sunset Cafe, our on-site restaurant, and will be able to earn the ServSafe Food Handler Certification.

Grades 9-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: N/A

[MSU: RST 1550 - Food Fundamentals](#)

Prostart II, CTE 9673 A&B **Industry Certificate(s) Available**

This nationally certified, competency based program covers all facets of the industry and includes instruction in: food preparation, lodging, customer service, and business management. Skill areas will include, but not limited to Breakfast Food & Sandwiches, Nutrition, Cost Control, Salads & Garnishing, Purchasing & Inventory, Meat, Poultry, & Seafood, Marketing, Desserts & Baked Goods, Sustainability in the Industry, and Global Cuisine. Students also learn guest relations along with how to keep accurate financial records for the profit and loss of the operation. Students rotate through production and service stations while serving the community at the Sunset Cafe, our on-site restaurant, and will be able to earn the ServSafe Food Manager Certification.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credits; Prerequisite: CTE 9672 A&B

[MSU: RST 2550 - Food Preparation Science](#)

Baking and Pastry, CTE 9680

In addition to reviewing and continued practice of safety and sanitation procedures, students will be introduced to basic baking terminology and measurement, baking percentages and ratios, ingredients, quick bread/yeast/lamination dough, cakes, chocolates, pies, pastries, cookies, planning and organization of bakery production, and dessert artistry.

Grades 10-12; 1 Semester; 1.0 Practical Arts Credits; Prerequisite: CTE 9672 A&B

WELDING AND FABRICATION

TECHNOLOGY



Welding and Fabrication I CTE 9901 A&B

Welding and Fabrication I provides the foundational understanding of welding and welding processes. In this course students will learn industry based safety standards and become familiar with the following welding processes: Oxyacetylene welding, torch cutting, ARC and MIG welding. Students will become familiar with basic blueprint reading, weld symbols, welding-related math, and measurement. As their skill level is developed, small projects will be introduced throughout the year. Students will have the opportunity to engage in the SkillsUSA student organization, which incorporates leadership, service learning, and competitions to demonstrate skill level attainment.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credit; Prerequisite: N/A

FRCC: [WEL 100 - Safety for Welders](#), [WEL 101 - Allied Cutting Processes](#), [WEL 103 - Basic Shielded Metal Arc I](#)

Welding and Fabrication II, CTE 9911 A&B **Industry Certificate(s) Available**

Welding and Fabrication II students will have the opportunity to refine what they learned in Level I as well as become proficient in more advanced welding processes such as SMAW, GMAW, and GTAW. Students will practice utilizing the various positions associated with each, and demonstrate proficiency through both visual and destructive testing techniques. In addition, they will identify welding symbols on drawings, read detail drawings, identify physical characteristics and mechanical properties of metal, explain pre and post heating of metals, and identify equipment and filler metals utilized in these processes. Throughout the year students will have the opportunity to work on and create more advanced welding projects for the community as well as engage in the SkillsUSA student organization, which incorporates leadership, service learning, and competitions to demonstrate skill level attainment.

Grades 10-12; 2 Semesters; 2.0 Practical Arts Credit; Prerequisite: CTE 9901

FRCC: [WEL 104 - Basic Shielded Metal Arc II](#) & [WEL 110 - Advanced Shielded Metal Arc I](#)

Welding and Fabrication III, CTE 9921A&B **Industry Certificate(s) Available**

In this course the student will build upon their prior learning in Level II and can expect to engage in more advanced welding processes. These processes include plasma cutting and FCAW and TIG welding utilizing alloys such as aluminum and stainless steel. Advanced blueprint reading, drawing and design, specifications, billing of materials, and Welding Procedure Specifications (WPS) will also be covered. Students will engage in advanced layout and fabrication processes to create projects for the community and engage in the SkillsUSA student organization, which incorporates leadership, service learning, and competitions to demonstrate skill level attainment.

Grades 11-12; 2 Semesters; 2.0 Practical Arts Credit; Prerequisite: CTE 9911

FRCC: [WEL 124 - Introduction to Gas Tungsten Arc Welding](#) & [WEL 201 - Gas Metal Arc Welding I](#)