



Cass County Career and Technical Education Center

*Program of Studies
2021-2022*

December 21, 2020 – Last Update

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Mission

Education & experiences to grow tomorrow's workforce!



Cass County CTE Center

Vision

Partnering to share current Cass County career and technical education programming while seeking to expand opportunities for high school students, providing them career awareness and post-secondary preparation through rigorous coursework, business partnerships, and college connections.

Partnership Goals

- Expand and enhance CTE opportunities for member schools
- Prepare students for emerging careers
- Support workforce needs in the region and state
- Post-secondary program alignment and preparation
- Leverage state CTE funding and grant opportunities
- Strengthen business partnerships and work-based learning experiences
- Foster and coordinate enhanced activities and virtual experiences

The C³TEC Story

In 2014, the Cass County Career and Technical Education Center (C³TEC) was established as a collaborative effort between Fargo and West Fargo Public Schools and Northern Cass School District. As members of the C³TEC, district leaders are committed to working collaboratively to strengthen career and technical education options for all high schools in the region through the sharing of programs, curriculums, teachers, facilities, and equipment.

As a "Virtual Center," C³TEC's programs are housed in one or more of the member district's high schools versus a single site. Through the sharing of courses, students may travel to sites to attend classes; along with emerging options for students to share curriculum via video conferencing and/or online delivery. The virtual center model contributes to cost efficiencies for schools while creating opportunities for more students to enroll in CTE courses.

Through the C³TEC, leaders will work to build and expand upon current partnerships with business and college institutions to create relevant educational opportunities and alignment for students. The C³TEC will help to foster innovative education that contributes to building a skilled regional workforce to meet economic workforce demands to grow tomorrow's workforce.

Follow us at:

- www.casscte.com
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COURSE DELIVERY METHODS

On-site (OS):

Students will participate in classroom and lab activities at a designated school site. Students may be responsible for transportation dependent upon home school agreement.

Video Conferencing (VC):

The course will be delivered via video conferencing tools and online resources. Courses will be scheduled by period. Students will have the opportunity to learn through direct instruction, activities, and feedback from their instructor. Field trips may be scheduled by the instructor for extended learning and career experiences.

Online (OL):

The course will be delivered through an (asynchronous) online format using a classroom learning management tool such as (Google Classroom, Schoology, Edmodo, etc.). Instructors will have a scheduled office hour to provide feedback and answer student questions via e-mail, an online chatroom, or by phone. Schools will have the option to flexibly schedule students based open hours in their schedule.

**What's your interest?
What's your learning style?
What's your option?
Choose a course for you!**

Agriculture		
CC100	Intro to Agriculture	VC
CC101	Plant Science I	VC
CC102	Plant Science II	VC
CC103	World & International Agriculture	OL
Aviation		
CC201	Aviation Technology I (Session 1)	OS
CC202	Aviation Technology I (Session 2)	OS
CC205/206	Aviation Technology II	OS
CC207	Unmanned Aerial Vehicle	OS
Diesel		
CC305/306	Diesel Technology I	OS
CC307/308	Diesel Technology II	OS
Health Science		
CC510	Certified Nurse Assistant	OS
CC506/507	Health Science I	OS
CC505	Prevention & Care of Athletic Injuries	VC
CC501/502	Medical Terminology	OL
Information Technology		
CC601	Intro to Coding & Gaming	VC
CC602	Programming with Python	VC
CC603	Programming I – Java	VC
CC604	AP Programming – Java (AP)	VC
CC605	Mobile App Development & Security	VC
CC606	IT Essentials I	VC
CC607	IT Essentials II	VC
CC611	Intro to Networks & Cybersecurity	VC
CC608	Cisco I – Networking	VC
Welding & Manufacturing		
VE339	Welding I	OS
VE340	Welding II	OS
VE241/242	Manufacturing I	OS
VE341/342	Manufacturing II	OS

COORDINATED PLAN OF STUDY FOR AGRICULTURE EDUCATION

Environmental Service Systems or Plant Systems

CCCTEC	MIS03	Course Name	Cr
CC100	01011	Intro to Agriculture	.5
CC101	01053	Plant Science I (formerly Botany/Horticulture I)	.5
CC102	01054	Plant Science II (formerly Botany/Horticulture II)	.5
CC103	01069	World & International Agriculture (online)	.5
CC999	01999	Cooperative Work Experience	.5

***Must take at least 2 credits**

COORDINATED PLAN OF STUDY FOR AVIATION TECHNOLOGY

Transportation Operation

CCCTEC	MIS03	Course Name	Cr
CC201	17812	Aviation Technology IA (Session 1)	.5
CC202	17812	Aviation Technology IB (Session 2)	.5
CC205/206	17813	Aviation Technology II	1
CC207	17814	Unmanned Aerial Vehicle	.5
CC999	17999	Cooperative Work Experience	.5-1

***Must take at least 2 credits**

COORDINATED PLAN OF STUDY FOR DIESEL TECHNOLOGY

Facility and Mobile Equipment Maintenance

CCCTEC	MIS03	Course Name	Cr
CC305/306	17040	Diesel Technology I	1
CC307/308	17041	Diesel Technology II	2
CC999	17999	Cooperative Work Experience	.5-1

***Must take at least 2 credits**

COORDINATED PLAN OF STUDY FOR HEALTH SCIENCE

Therapeutic Services

CCCTEC	MIS03	Course Name	Cr
CC510	07032	Certified Nurse Assistant	.5
HEC201/202,	07033	Health Science I	1
CC506/507	07034	Prevention and Care of Athletic Injuries	.5
CC505	07036	Medical Terminology Online – Dual Credit	.5
CC501, CC502			

***Must take at least 2 credits**

COORDINATED PLAN OF STUDY FOR INFORMATION TECHNOLOGY

Programming and Software Development

CCCTEC	MIS03	Course Name	Cr
CC601	27120	Intro to Coding and Gaming	.5
CC602	27123	Programming Essentials with Python (NEW)	.5
CC603, VE289	27125	Programming I – Java	.5
CC604, VE290	27127	AP Programming – Java (AP)	.5
CC605	27128	Mobile App Development & Security	.5

Network Systems

VE285, TECH323, CC606	27219	IT Essentials I	.5
VE286, TECH324, CC607	27120	IT Essentials II	.5
CC611 or VE395	27265	Intro to Networks & Cybersecurity (NEW - Home & Small Business applications)	.5
CC608, VE391	27266	Cisco I – Introduction to Networks (Commercial Use)	.5
CC609, VE392	27999	Help Desk – Cooperative Work Experience	.5-1
CC999			

***Must take at least 2 credits from a pathway**

COORDINATED PLAN OF STUDY FOR WELDING & MANUFACTURING

Production

CCCTEC	MIS03	Course Name	Cr
VE241 & VE242	17113	Manufacturing I	1
VE341 & VE342	17113	Manufacturing II	1
VE339 or CC610	17236	Welding I	1
VE340 or CC611	17237	Welding II	1

***Must take at least 2 credits**

Students must earn at least 2 credits in a CTE pathway and 2 additional CTE credits to qualify for the ND CTE Scholarship.

Course Code Legend: CC=CCCTEC, HEC=West Fargo, TECH=West Fargo, VE=Fargo

Summer Youth Career Academy

Save the Dates – June 15, 16 & 17, 2021

The Summer Youth Career Academy (SYCA) is an exciting new event designed to promote fun, hands-on learning sessions, along with career awareness opportunities for youth ages 10-14. SYCA is being planned for **June 15, 16 & 17, 2021**. Mark your calendars and get ready to spread the word! SYCA will be open to students in Central Cass, Fargo, Kindred, Northern Cass, Oak Grove, Shanley, and West Fargo.

Information on the upcoming SYCA sessions will be announced in March, with registration open from April 1 – May 15, 2021. Please check with your school's middle school counselors or principal for online registration and session details. Classes will be designed for AM, PM, and all-day sessions aligning to career pathways in agriculture, visual and digital arts, medical careers, food exploration, construction, automotive, coding, STEM, manufacturing, robotics, entrepreneurship and aviation.

Stay-tuned for session details, locations, lunch, and registration for the first Cass County Summer Youth Career Academy!





AGRICULTURE EDUCATION

The vision of Agricultural Education is to prepare students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resource systems.

INTRO TO AGRICULTURE

Course Code: (CC100)	Grade: 9-12	Credit: ½	Term: Fall	Prerequisite: None
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Location and delivery: Video – online class with labs and field trips

Instructor: Ms. Tamra Maddock

Description: This course is designed to enhance student’s perceptions of agriculture, its application to the world around them, and careers. This course serves as a foundation to the Agriculture Education. Individual units will familiarize the student with basic mechanical theory, food production, applied sciences, animals, and more. Topics may include soils, irrigation, land judging, plants, crop and weed identification, range management, horticulture, nursery, diseases, insects, and chemicals. As a hybrid course, students will learn through video conferencing and online tools. Students will be asked to complete activities, in and out of the classroom, so should possess skills to navigate independently. **(MIS03 Course Code #01012)**

WORLD & INTERNATIONAL AGRICULTURE

Course Code: (CC103)	Grades: 10-12	Credit: ½	Term: Spring	Prerequisite: None
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Location and delivery: Online

Instructor: Ms. Tamra Maddock

Transportation: Schools will provide bussing for field trips.

Description: A course designed to introduce students to global agriculture and careers that impact the world, the environment, society, and the economy. This course also includes agricultural innovation, career development, leadership, communications, and personal finance. As an online course, course content will be facilitated for students to independently complete activities through a flexible schedule. Students will be asked to complete activities, in and out of the classroom, so should possess skills to navigate independently. **(MIS03 Course Code 01069)**

PLANT SCIENCE I (formerly BOTANY/HORTICULTURE/LANDSCAPE DESIGN I)

Course Code: (CC101)	Grade: 9-12	Credit: ½	Term: Fall	Prerequisite: None
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Location and delivery: Video – online class with labs and field trips

Instructor: TBD

Description: This course focuses on the fundamental principles of horticulture. Students will be exposed to concepts in propagating plants in a greenhouse setting. Students will study Botany/plant science, growing plants, the business of raising and selling plants, and small business management. Hands-on experiences will include computer assisted landscape design, home and business landscaping, commercial greenhouse operation, plant nutrition, landscape beautification, and community involvement. As a hybrid course, this class will be delivered through video and on-line coursework. Students will be asked to complete activities, in and out of the classroom, so should possess skills to navigate independently. **(MIS03 Course Code 01053)**

PLANT SCIENCE II (formerly BOTANY/HORTICULTURE/LANDSCAPE DESIGN II)

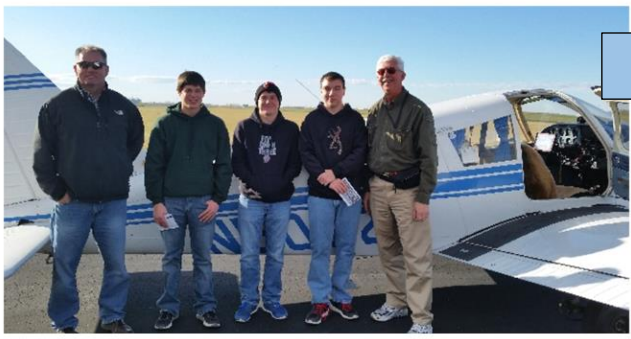
Course Code: (CC102)	Grade: 10-12	Credit: ½	Term: Spring	Prerequisite: Plant Science I
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Location and delivery: Video – online class with labs and field trips

Instructor: TBD

Transportation: Schools will provide bussing for field trips.

Description: This course is a continuation of Plant Science to prepare students to produce greenhouse/nursery plants and to maintain plant growth and propagation structures. Topics to be covered include soils, plants, plant identification, and plant entomology, the importance of plant cell structures, functions of cells, plant processes, nonvascular plants, vascular plants, and plant reproduction. Students may be introduced to conservation and ecological concepts encountered in our environment. Landscape design units will prepare students to design and maintain planted areas. As a hybrid course, this class will be delivered through video and on-line coursework. Students will be asked to complete activities, in and out of the classroom, so should possess skills to navigate independently. **(MIS03 Course Code 01054)**



AVIATION TECHNOLOGY

The vision for Aviation Technology education is to expose and empower young learners with the knowledge and technical skills to pursue careers in the aerospace industry including flight, design and engineering, maintenance and unmanned aerial systems.

AVIATION TECHNOLOGY I (Session 1)

Course Code: (CC201)	Grade: 10-12	Credit: ½	Term: Fall or Spring	Prerequisite: None
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Location and delivery method: On-site Sheyenne HS – 7:25 am – 8:15 am

Instructor: Mr. David Gravidahl

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: Exposes students to careers in the field of aviation, such as air traffic control, flight dispatching and airport management, etc. The course covers fundamentals of flight, flight operations, aviation weather, performance and navigation. Units of instruction include flight history, safety, space, airport layout, aeronautical charts, radar, radio procedures, aerodynamics, weather patterns and hazards. Emphasis on applied academics in math and science are integrated, along with decision-making principles as it applies to flight-related factors. Lessons are enhanced by guest speakers and field trips to local airports and aviation sites. **(MIS03 Course Code 17812)**

AVIATION TECHNOLOGY I (Session 2)

Course Code: (CC202)	Grade: 10-12	Credit: ½	Term: Fall or Spring	Prerequisite: Aviation I-S1
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Location and delivery method: On-site Sheyenne HS – 7:25 am – 8:15 am

Instructor: Mr. David Gravidahl

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course is a continuation of concepts learned in Aviation I. This course will cover advanced flight topics from area Aviation experts. Students will be exposed to new concepts in UAS and drone technology as well as expanding topics covered in Aviation I to an advanced level. Students will be preparing to pass the Federal Aviation Administration (FAA) private pilot written exam. Successful completion of Aviation I Session 1A is a prerequisite. **(MIS03 Course Code 17812)**

AVIATION TECHNOLOGY II

Course Code: (CC205/206)	Grade: 10-12	Credit: 1	Term: Year	Prerequisite: Aviation I
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Location and delivery method: On-site Sheyenne HS – 8:20 am – 9:15 am

Instructor: Mr. David Gravidahl

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course is a continuation of concepts learned in Aviation I. This course will cover advanced flight topics from area Aviation experts. Students will be exposed to new concepts in UAS and drone technology as well as expanding topics covered in Aviation I to an advanced level. Students will be preparing to pass the Federal Aviation Administration (FAA) private pilot written exam. Successful completion of Aviation I (both session 1A & 1B) is a prerequisite. **(MIS03 Course Code 17813)**

UNMANNED AERIAL VEHICLE (NEW)

Course Code: (CC207)	Grade: 11-12	Credit: ½	Term: Fall	Prerequisite: Aviation I
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Location and delivery method: On-site Sheyenne HS – TBD

Instructor: Mr. David Gravidahl

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: The Unmanned Aerial Systems course will teach students a basic understanding of recreational and commercial unmanned aircraft operations. They will identify the responsibility and authority of the remote PIC, discuss rules of UAS operation, understand the significance of airspace Classes, special-use airspace, understand weather and how it affects flight of UAV, general loading and performance data, and airport operations. Students will be prepared to take the FAA Part 107 exam. **(MIS03 Course Code 17814)**



DIESEL TECHNOLOGY

The Diesel Technology program is designed to expose students to careers in the diesel industry and apply foundational knowledge and technical skills in the maintenance of heavy equipment and trucks.

DIESEL TECHNOLOGY I

Course Code: (CC305, CC306)	Grade: 10-12	Credit: 1	Term: Year	Prerequisite: None
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Location and delivery method: On-site Sheyenne HS – 7:25 am – 8:15 am

Instructor: Mr. Ralph Elletson

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course allows students to experience a variety of diesel and heavy equipment practices. Students will explore the field of diesel and heavy-duty equipment repair, and will learn the basics of safety, equipment identification, and the use of hand and power tools in lab setting. Students will learn a about careers within the diesel and heavy equipment repair industry. Lessons will be enhanced by industry partners such as: RDO, General Equipment, Butler, and Titan Machinery. Students will be introduced to diesel engine operation and components, hydraulics, brakes/suspension, and electrical. Technology-related mathematics, reading, writing, vocabulary, blueprint reading, and science are integrated throughout the curriculum. NATEF standards and guidelines are followed. This course is a prerequisite to Diesel Technology II. **(MIS03 Course Code 17040)**

DIESEL TECHNOLOGY II

Course Code: (CC307, CC308)	Grade: 11-12	Credit: 2	Term: Year Block	Prerequisite: Diesel I
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Location and delivery method: On-site Sheyenne HS Block – 8:20 am – 10:10 am

Instructor: Mr. Ralph Elletson – Sheyenne High School

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course will serve as a continuation from Diesel I. Students will be exposed to diesel careers and college options in construction, agriculture, aviation, and trucking vehicles. Students will be required to demonstrate sound safety practices, shop organization and management. Students will learn advanced diesel concepts in fuel systems, steering and suspension, tire and wheel diagnostics, service and repair of electrical and electronic controls and systems, engines, drive train, hydraulics and air brake systems. Training and practice of Preventive Maintenance Inspection (PMI) is accomplished. Lessons will be enhanced by industry collaboration, job shadows and internship experiences. Technology, mathematics, reading, writing, vocabulary, blueprint reading, and science are integrated throughout the curriculum. NATEF standards and guidelines are followed. **(MIS03 Course Code 17041)**

COOPERATIVE WORK EXPERIENCE

Course Code: (CC999)	Grade: 11-12	Credit: Maximum 2 credits in a student’s high school experience.
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Prerequisite: The employment must be preceded by, or concurrent with, classroom instruction related to the work experience. Students must be at least 16 years old and may be paid a wage by the employer.

Location and delivery: a training agreement among all partners outlining the expectations of each party (school, employer, student, and parents/guardians) is required for the work experience.

Instructor: Registration only by arrangement with instructors from Agriculture, Aviation, Diesel, and Welding.

Transportation: Student will be responsible for transportation.

Description: Provides students with a regularly scheduled, supervised employment opportunity related to Trade and Industrial Occupations in order to develop and improve work skills. **(MIS03 Course Code 17999)**



HEALTH SCIENCE & MEDICAL CAREERS

Health Sciences within the North Dakota Department of Career and Technical Education are committed to provide career awareness, work readiness skills and occupational preparation to help to continue to fill the need for dedicated professionals that provide support, service and leadership in the many areas of healthcare.

MEDICAL TERMINOLOGY

Course Code: (CC501 or 502)	Grade: 10-12	Credit: ½	Term: Fall/Spring	Prerequisite: None
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Location and delivery method: Online

Instructor: TBD based on instructor schedules

Transportation: Not applicable

Description: This class is designed to introduce students to the health information (Medical Records) field. Students will learn prefixes, suffixes and root words for medical terms. This will include meanings, spellings and pronunciations. Emphasis is on building a working medical vocabulary based on body systems. Anatomy and physiology of major organs, pathological conditions, laboratory studies, clinical procedures and abbreviations are studied for each body system. The student will also learn medical terminology as it relates to pathology, diagnostic, surgical, clinical and laboratory procedures and common abbreviations and acronyms by body systems. Students choosing to participate have the option to complete the NDSCS application process and required \$35 fee. **(MIS03 Course Code 07036) (Dual Credit Option)**

PREVENTION AND CARE OF ATHLETIC INJURIES

Course Code: (CC505)	Grade: 10-12	Credit: ½	Term: Fall/Spring	Prerequisite: None
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Location and delivery method: Video conferencing or Online

Instructor: TBD based on instructor schedules

Transportation: Schools will provide bussing for field trips.

Description: Provides the student with a background in athletic training and basic health care. The course emphasizes injury prevention, nutrition, first responder management daily for athletic injuries and skills to fulfill the activities of daily living. Students will be able to complete requirements to become a student athletic trainer. **(MIS03 Course Code 07034)**

HEALTH SCIENCE I

Course Code: (CC506/507)	Grade: 10-12	Credit: 1	Term: Year	Prerequisite: None
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Location and delivery method: On-site or Online

Instructor: TBD based on instructor schedules

Transportation: Students may be responsible for transportation. Schools will provide bussing for field trips.

Description: This course explores the many career opportunities available in the medical, nursing and allied health professions. Students learn basic health-provider skills, including CPR and First Aid. Curriculum content includes ethics, legalities, safety, medical terminology, communication, infection control, professional attitudes, anatomy, physiology and basic clinical skills. Health professionals are utilized as speakers to enrich content. Students participate in spring observations of health professional. (Examples: Dentistry, Dental Hygienist, Nursing, Pharmacy, Radiology, Sports Medicine, Veterinary Technician.) **(MIS03 Course Code 07033)**

CERTIFIED NURSING ASSISTANT (CNA)

Course Code: (CC510)	Grade: 11-12	Credit: ½	Term: Summer/Spring	Prerequisite: None
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Location and delivery method: On-site

Instructor: TBD based on instructor schedules

Transportation: Students may be responsible for transportation. Schools will provide bussing for field trips.

Description: This class is designed for students who are interested in a medical career or interested in preparing for employment as a Certified Nursing Assistant. Basic nursing principles are taught in a classroom setting while communication techniques, basic physical assessment and basic nursing procedures are demonstrated in a clinical lab setting. Emphasis is placed on care of the client in the long-term care. Student will be responsible for completing 16 hours of clinical experience outside of the classroom scheduled by the instructor. Upon successful completion of the skills portion of the course the student will be eligible to take the certified nurse aid exam. Health Science I will provide supportive background knowledge for this course. **(MIS03 Course Code 07032)**



INFORMATION TECHNOLOGY & CODING, CYBERSECURITY

Information Technology Education prepares students for future employment and/or continuing education opportunities in the growing field of Information Technology, which include work in computer hardware, software, electronics, semiconductors, internet, telecom equipment, e-commerce, and computer services.

INTRO TO CODING AND GAMING (ICG)

Course Code: (CC601)	Grade: 9-12	Credit: ½	Term: Fall or Spring	Prerequisite: None
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Location and delivery method: Video Conferencing

Instructor: Mr. Ullrich Reichenbach – Fargo, Mr. Stephan Garaas or Mr. Ronald Thompson – West Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: The course will provide students with a foundation for understanding programming languages. Fundamentals of logic, design, coding, structures, and controls will be applied through a game-like environment, such as Scratch, GameSalad or emerging programs. Careers in coding and programming are explored. Students will experience project-based learning, teamwork, problem-solving, and increase communication. **(MIS03 IT Course Code 27120)**

PROGRAMMING WITH PYTHON

Course Code: (CC602 or VE395)	Grade: 10-12	Credit: ½	Term: Fall or Spring	Prerequisite:
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Location and delivery method: Video Conferencing and On-site

Instructor: Mr. Ullrich Reichenbach - Fargo or Mr. Stephan Garaas or Mr. Ronald Thompson – West Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: The world’s tech companies love Python. Google, Youtube, Facebook, IBM, NASA, Dropbox, Yahoo, Mozilla, Quora, Instagram, Uber and Reddit are just a few of the big names that use Python for a wide range of purposes and are continuously on the lookout for Python engineers. Python is a programming language, which is used to develop websites, web applications, GUI, network servers, back-end APIs, desktop apps, medial tools, and machine learning. You can also use Python to analyze data and “glue” other languages together. **(MIS03 IT Course Code 27123)**

COMPUTER PROGRAMMING I – Java

Course Code: (CC603 or VE289)	Grade: 10-12	Credit: ½	Term: Fall or Spring	Prerequisite: ICG
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Location and delivery method: Video Conferencing and On-site

Instructor: Mr. Ullrich Reichenbach - Fargo or Mr. Stephan Garaas or Mr. Ronald Thompson – West Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course introduces the field of Computer Science, including design and coding principles. By studying case studies and designing graphical user interfaces, students will learn the principles of object-oriented programming, define classes, instantiate objects, and write methods. Students will also work with algorithms which make logical decisions and iterate. Optional NDSCS Dual Credit **(MIS03 IT Course Code 27125)**

MOBILE APP DEVELOPMENT & SECURITY

Course Code: (CC605)	Grade: 10-12	Credit: ½	Term: Fall or Spring	Prerequisite: None
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Location and delivery method: Video Conferencing and On-site

Instructor: Mr. Stephen Garaas – West Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: Students use mobile technology to solve everyday problems for their community so why not task them to develop one? In this course students will learn the basics of the app system and software development cycle. They will also learn about code modification and additional basic app coding skills, including the topics of variables, simple data types, conditional programming constructs, and simple library classes. The course also provides a foundation for the design, implementation, and management of database systems. **(MIS03 IT Course Code 27128)**

AP COMPUTER PROGRAMMING – Java

Course Code: (CC604 or VE290)	Grade: 10-12	Credit: ½	Term: Spring	Prerequisite: Java
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Location and delivery method: Video Conferencing and On-site

Instructor: Mr. Ullrich Reichenbach – Fargo, Mr. Stephen Garaas – West Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: Students will study abstract classes, arrays, lists, and advanced concepts of graphical user interfaces. Main topics also include sequences, searches, input and output streams. This course, together with the first semester, will prepare students to take the AP exam in Computer Science if they wish. **(MIS03 IT Course Code 27127)**

IT ESSENTIALS I

Course Code: (CC606 or VE285)	Grade: 10-12	Credit: ½	Term: Fall	Prerequisite: None
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Location and delivery method: Video Conferencing and Online

Instructor: Mr. Ullrich Reichenbach – Fargo – Mr. Stephen Garaas – West Fargo

Transportation: Schools will provide district bussing in Fargo and West Fargo. Students responsibility in CC and NC.

Description: This is the first of two courses that prepare students to obtain their CompTIA A+ Essentials certification. This course focuses on computer hardware, operating systems, troubleshooting computer systems and customer service skills/professionalism required of entry-level IT professionals. Students will learn to identify internal components of the computer, disassemble and assemble a complete personal computer, install multiple operating systems, and create/configure multiple virtual computers using virtualization software. Students will also learn how to configure computers to access multiple types of networks. **(MIS03 IT Course Code 27219) (Dual Credit Option)**

IT ESSENTIALS II

Course Code: (CC607 or VE286)	Grade: 10-12	Credit: ½	Term: Spring	Prerequisite: IT Essentials I
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Location and delivery method: Video Conferencing and On-site

Instructor: Mr. Ullrich Reichenbach – Fargo - Mr. Stephen Garaas – West Fargo

Transportation: Schools will provide district bussing in Fargo and West Fargo. Students responsibility in CC and NC.

Description: This is the second of two courses that prepare students to obtain their CompTIA A+ Essentials certification. This course focuses on handheld mobile devices (Android and Apple IOS), laptop computers, printers, and customer service skills/professionalism required of entry-level IT professionals. Students will disassemble and reassemble a laptop computer, practice communication skills, troubleshoot hardware and software issues, and perform preventative maintenance activities. Students will have an opportunity to research areas of computing that they are interested and work with circuit boards to understand how electricity and data flow through a computer. Optional NDSCS Dual Credit **(MIS03 IT Course Code 27220)**

INTRO TO NETWORKS & CYBERSECURITY (Home & Small Business)

Course Code: (CC609 or VE395)	Grade: 10-12	Credit: ½	Term: Fall	Prerequisite:
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Location and delivery method: Video Conferencing and Online

Instructor: Mr. Ullrich Reichenbach - Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: Just like you, homes and business are becoming smart! Wifi, smart devices, TVs, WHDI, AppleTV, security systems, and wireless technologies are growing, along with the need to understand set ups, software applications, troubleshooting and security prevention. This course will introduce students to principles and practices of designing, home and small business networks, along with an introduction to cybersecurity concepts. Students will demonstrate evidence of learning through networking and lab activities. **(MIS03 IT Course Code 27265)**

CISCO I – INTRODUCTION TO NETWORKS

Course Code: (CC608 or VE391)	Grade: 10-12	Credit: ½	Term: Fall	Prerequisite: None
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Location and delivery method: Video Conferencing and Online

Instructor: Mr. Ullrich Reichenbach - Fargo

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This is the first level of a series on computer networking. Participants will learn about current and emerging networking technology. The course will cover safety, networking terminology and protocols, network standards, LAN's, WAN's, the OSI model, cabling, router configuration, topologies, IP addressing, and other general networking information. Students will learn the principles of both wired and wireless networks Students will complete labs both using virtual software and physical hardware. Optional Certified Cisco Networking Associate (CCNA) exam. Optional NDSCS Dual Credit – 4 credits. **(MIS03 IT Course Code 27265)**

HELP DESK – COOPERATIVE WORK EXPERIENCE

Course Code: (CC610 or CC611) **Grade:** 10-12 **Credit:** ½ -1 **Term:** Fall or Spring

Prerequisite: Completion of IT Essentials I and IT Essentials II

Location and delivery: a training agreement among all partners outlining the expectations of each party (school, employer, student, and parents/guardians) is required for the work experience.

Instructor: Registration only by arrangement with counselor/principal, instructor, and IT Help Desk supervisor.
(MIS03 IT Course Code 27999)



WELDING & MANUFACTURING

The Welding & Manufacturing Technology program is designed to provide experiences pertaining to assembly, manufacturing, energy and construction while modeling industry standards in the lab and classroom for future training, job preparation and careers.

MANUFACTURING I

Course Code: Fargo (VE241/242) **Grade:** 9-12 **Credit:** 1 **Term:** Year **Prerequisite:** None

Location and delivery method: On-site South High School

Instructor: Mr. Andrew Henjum – South High School

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course offers students an introduction to the design and operation of a metals production system (machining, welding, and fabrication). Students will learn how to properly read and create layout drawings. Different aspects of quality control, production planning and procedures, and different types of product manufacturing will be emphasized. This is a hands-on, project-based class where students can design and develop various projects. Students use modern equipment such as a CNC plasma table, CNC machine tools and a variety of electric welding equipment. Students develop hard and soft employability skills and explore several occupations in the manufacturing sector. **The differentiated instructional approach used in this class provides interesting and challenging activities for students of all abilities. Dual Credit: Optional – MGFT 110. (MIS03 Course Code 17113)**

MANUFACTURING II

Course Code: Fargo (VE341/342) **Grade:** 10-12 **Credit:** 1 **Term:** Year **Prerequisite:** Manufacturing I

Location and delivery method: On-site South High School

Instructor: Mr. Andrew Henjum – South High School

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course provides students with a broad base of employability skills necessary for successful careers in manufacturing, construction, and service-based fields. Emphasis is placed on welding and machine tooling processes. Safe working procedures, work ethics, and cooperative work attitudes and techniques are taught. Curriculum includes skill development in Arc (stick and wire) and gas welding. Flame cutting, plasma arc cutting, brazing and soldering techniques are also covered. Curriculum activities designed to develop the student's machining skills on the metal lathe, vertical mill, drill press, grinders, and band saw are presented. Students are taught to use precision measuring equipment and to interpret technical drawings. Pattern transfer and layout procedures are introduced. Material identification, industrial math, blueprint reading, career awareness and much more will be learned as the students explore their way through this class. This is an enjoyable, hands-on, activity-based learning experience. **The differentiated instructional approach used in this class provides interesting and challenging activities for students of all abilities. (MIS03 Course Code 17113)**

WELDING I & II

Course Code: Fargo Code (VE339/340) Grade: 10-12 Credit: 2 Term: Fall-Spring Block Prerequisite: Welding I

Location and delivery method: On-site NDSCS – Fargo

Instructor: Mr. Lee Larson or Mr. Mitch VanVleet – NDSCS

Transportation: Students will be responsible for transportation. Schools will provide bussing for field trips.

Description: This course gives beginning instruction in laboratory safety and the use of personal protection equipment, with strong emphasis on the safe handling of welding and cutting equipment. It includes basic hands-on instruction on Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and Oxy-Fuel Cutting (OFC) on various thicknesses of metal and techniques used. Also covered are welding supplies and equipment. Students choosing to participate must complete the NDSCS application process and required \$35 fee. **(MIS03 Course Code 17236) (Dual Credit Option: MGFT110 and/or MGFT 123)**

Cass County – Shared Course - Code List

Course Name	Course Code	CCCTEC Code & Fargo
INTRO TO AGRICULTURE	(01011)	(CC100)
PLANT SCIENCE I (formerly BOTANY/HORTICULTURE I)	(01053)	(CC101)
PLANT SCIENCE II (formerly BOTANY/HORTICULTURE II)	(01054)	(CC102)
WORLD & INTERNATIONAL AGRICULTURE	(01069)	(CC103)
AVIATION TECHNOLOGY IA (Session 1)	(17812)	(CC201)
AVIATION TECHNOLOGY IB (Session 2)	(17812)	(CC202)
AVIATION TECHNOLOGY II	(17813)	(CC205, CC206)
UNMANNED AERIAL VEHICLE (UAV)	(17814)	(CC207)
DIESEL TECHNOLOGY I	(17040)	(CC301, CC302)
DIESEL TECHNOLOGY II - BLOCK	(17040)	(CC305, CC306)
COOPERATIVE WORK EXPERIENCE	(17999)	(CC999)
MEDICAL TERMINOLOGY (online)	(07036)	(CC501 or CC502)
PREVENTION\CARE OF ATHLETIC INJURIES	(07034)	(CC505)
HEALTH SCIENCE I	(07033)	(CC506, CC507)
HEALTH SCIENCE II	(07033)	(CC508, CC509)
SUMMER SCHOOL – CERTIFIED NURSING ASSIST	(07032)	(CC510) OR (VE385)
INTRO TO CODING & GAMING	(27120)	(CC601)
PROGRAMMING WITH PYTHON	(27123)	(CC602)
COMPUTER PROGRAMMING I – Java (NEW)	(27125)	(CC603) OR (VE289)
AP COMPUTER PROGRAMMING – Java	(27127)	(CC604) OR (VE290)
MOBILE APP DEVELOPMENT & SECURITY	(27128)	(CC605)
IT ESSENTIALS I	(27219)	(CC606) OR (VE285)
IT ESSENTIALS II	(27220)	(CC607) OR (VE286)
INTRO TO NETWORKS & CYBERSECURITY (NEW)	(27265)	(CC611 OR (VE395)
CISCO I-INTRO TO NETOWORKING	(27266)	(CC608) OR (VE391)
HELP DESK – COOPERATIVE WORK EXPERIENCE	(27999)	(CC611 or CC612)
MANUFACTURING I	(17113)	(VE241, VE242)
MANUFACTURING II	(17113)	(VE241, VE242)
WELDING I & II	(17236)	(VE339, VE340)

Course Implementation and/or Rotation Schedule

Program\Course	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Agriculture Education							
Intro to Agriculture				Fall	Fall, Pd 8	Fall, Pd 8	Fall
Plant Sciences I (Botany I)	Spring, Pd 8	Fall	Spring	Spring	Fall, Pd 8, NT	Fall, Pd 8	Spring
Plant Sciences II (Botany II)		Spring	Off	TBD	Spring, Pd 8, NT	Spring, Pd 8	Both
World Agriculture		Fall	Off	Spring	Spring, Pd 8	Spring, Pd 8	TBD
Agriculture Sales			Off	Off	Off	Off	Off
Agriculture Business			Off	Off	Off	Off	Off
Small Animal Care			Off	Developing/NT	Developing/NT	Pilot – NT	Pilot - NT
Veterinary Science			Off	Developing/NT	Developing/NT	Pilot - NT	Pilot - NT
Aviation							
Aviation I (Session 1)	Year, Pd 1	Year	Year	Fall	Fall, Pd 1	Fall, Pd 1	Fall
Aviation I (Session 2)				Spring	Spring, Pd 1	Spring, Pd 1	Spring
Aviation II	Year, Pd 2	Year	Year	Year	Year	Year	Year
Unmanned Aerial Vehicle						NEW - Fall	Both
Diesel Technology							
Diesel Technology I	Year, Pd 1	Year	Year	Year	Year	Year	Year
Diesel Technology II		Year Block	Year Block	Year Block	Year Block	Year Block	Year
Health Science							
Medical Terminology	Sem-Online	Online	Online	Online - Both	Online - Both	Online - Both	Online - Both
Prevention\Care	Spring-video	Sem 1 or 2	Online	Spring Online	Online - Both	Online - Both	Online - Both
Certified Nursing Assist	Summer	Sem 1 or 2	Summer, Spring	Summer, Spring	Summer, Spring	Summer, Spring	Summer, Fall
Health Science I					Year, NS	Year, TBD	Year
Information Technology							
IT Essentials I			Off	Off	Offered	Fall	Fall
IT Essentials II			Off	Off	Offered	Spring	Spring
Intro Coding & Gaming		Fall	Fall or spring	Fall or spring			Both
Visual Basic – Dual Credit	Develop	Spring	C# - spring	NDSCS dropped	NA	NA	NA
Mobile App		Fall	Fall or spring	Spring	Both		Both
Programming w/Python						Develop	New - Both
Comp Program I – Java	Develop	Fall	Fall	Fall	Both		Fall
AP - Java	Develop	Spring	Spring	Spring	Spring		Spring
Intro to Networks & Cyber						Develop	Fall
Cisco I – South		Fall	Year	Year	Fall		Spring
Cisco II – NDSCS		Spring	Year	Year	Spring	Last year	NDSCS Online
Cisco III – NDSCS		Fall	Year	Year	Fall	NDSCS Online	NDSCS Online
Cisco IV - NDSCS		Spring	Year	Year	Spring	NDSCS Online	NDSCS Online
Welding - Manufacturing							
Welding I	Fall, Pd 1-2	Fall	Fall	Fall	Fall	Fall Block	Fall Block
Welding II	Spring, Pd 1-2	Spring	Spring	Spring	Spring	Spring Block	Spring Block
Manufacturing I, 2 & 3		Year	Year	Year	Year	Year	Year



Thank you to our industry sponsors and advisory committee members for their classroom participation, industry tours, program equipment, and on-going expertise to improve our curriculums and student experiences!

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|-----------------------------------|--|--------------------------------|
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| <i>Gate City State Bank</i> | <i>Northland Technical College</i> | <i>West Side Steel</i> |

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